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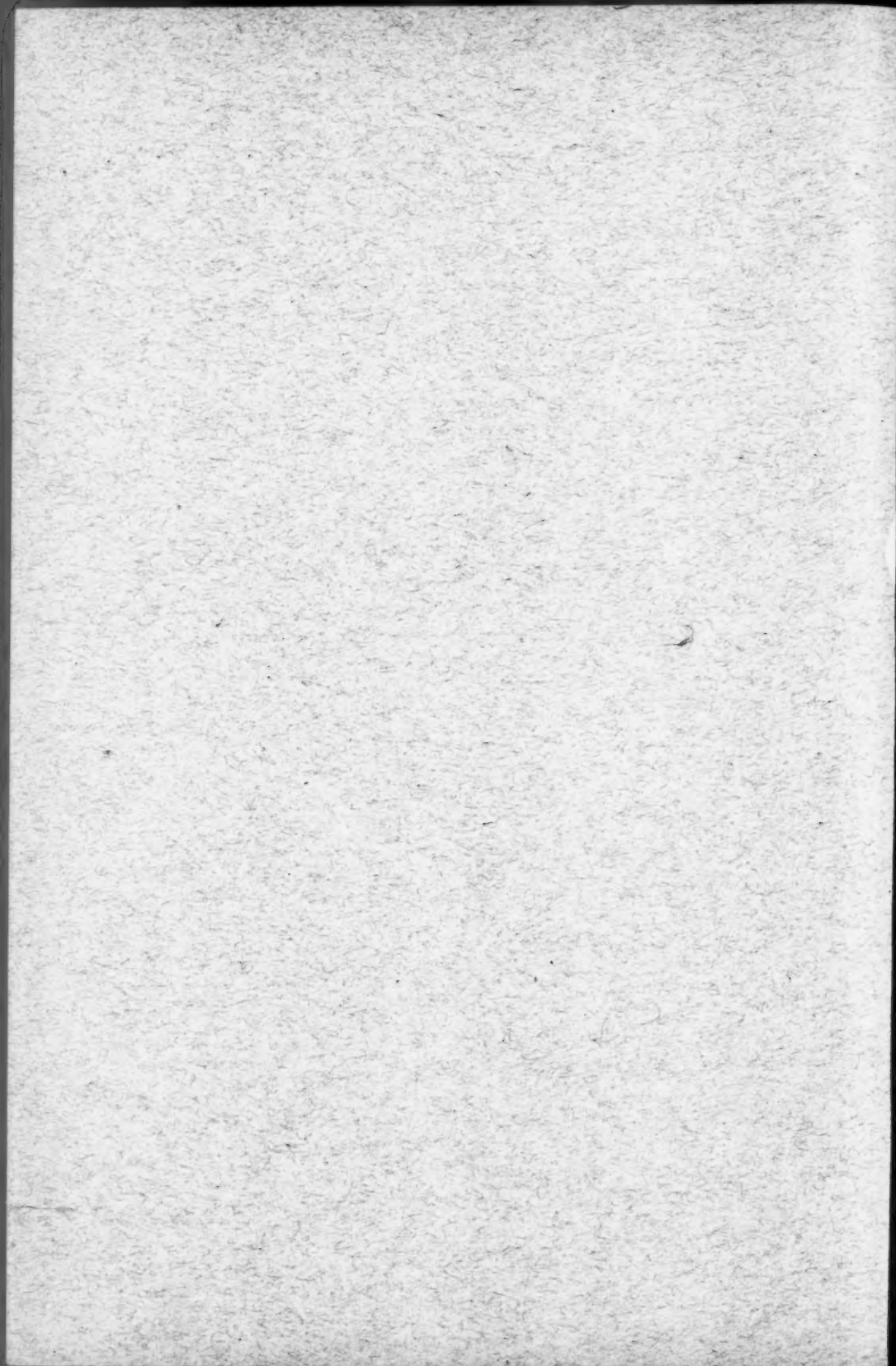
ROYAL SOCIETY OF MEDICINE

SECTION OF THE HISTORY OF MEDICINE.

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TITLE, CONTENTS AND INDEX.



Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

PRESIDENT'S ADDRESS.¹

By Sir D'ARCY POWER, K.B.E., F.R.C.S.Eng., F.S.A.

My first duty on taking the President's Chair this afternoon is to thank you for placing me in it. I do so very heartily, not only for the honour you have conferred upon me personally, but because it shows that the surgical side of our profession has at last been thought worthy to share in the more humane and polite studies which have long been associated with medicine. To a large extent this apparent isolation has been our own fault. Literary merit has never been very marked amongst surgeons, and without a good general education there can be very little interest in history. A few highly cultivated surgeons, like Cheselden, Brodie and the Pagets, have existed in each generation, but with a few exceptions surgeons have chosen to devote their talents rather to practical and scientific than to historical subjects. Mr. Pettigrew and Sir James Y. Simpson, who were endowed with literary attainments of no mean order, chose to direct their energies to the antiquarian rather than to the historical aspect of medicine. But, having once made a beginning, I look forward to the time when in this Section, as in many medical societies, a surgeon will take his turn as President in rotation with a physician and a general practitioner.

The training of a surgeon leads him to face facts and apply radical measures. I may be excused, therefore, if I offer a few suggestions tending to make this Section even more useful and certainly no less interesting than it has been hitherto.

¹ At a meeting of the Section, held October 16, 1918.

Looking back upon the work which has been done in the six years of its existence I find that the communications have ranged over a wide field. Some of the papers have dealt with biography, others with art; some have treated of anthropology, others of superstitions. All are valuable, and so much is to be learnt from them incidentally about the progress of medicine, that they will no doubt serve as sources from which future historians will draw many of their facts. But, if I may say so without giving offence or belittling what has already been done, it seems to me that we have been too discursive and have dissipated our energies until we have hardly fulfilled the object for which this Section was established—viz., to promote the study of the history of medicine—for we have made no attempt to write history itself. We are, in fact, very much in the condition of the Royal Society during the early years of its existence when it took all knowledge as its province.

Destructive criticism is useless and often harmful because it is depressing and leads to no good results. I would therefore venture to offer a few suggestions as to what might be done in the future to advance the history of our art and to make this Section permanently serviceable. In surgery we know very little of the times when the various surgical diseases became prominent in the text-books, nor when the different operations for their relief were devised, modified, crystallized in their present form or abandoned. Something, indeed, has been done in connexion with the history of the modern operation of cutting for stone, of ovariectomy and of anæsthesia, whilst Mr. Alban Doran has patiently collected materials for a history of surgical instruments. A very little investigation shows that few operations were devised *de novo*, but most have passed through a gradual and interesting process of evolution. When did surgery cease to be an itinerant profession? For many years a surgeon lived in the patient's house after an operation and passed from one house to another, seemingly without a fixed home; whilst the baser sort operated one day and fled the next, always receiving the fee in advance. Of both these conditions vestigia still linger in the profession.

It would, I think, make the work of this Section more useful if in future years we could turn to our *Proceedings* and find a readable account of the history of the operation for the cure of fistulæ, of piles, of urethral stricture or even of the larger subject of amputations, for we are only now beginning to learn from pathology why our forefathers in septic days preferred the circular flush amputation

to the flap methods which seem at first sight to be so much more satisfactory. Equally on the speculative side of surgery we know very little of the theories which have been advanced at different times to account for the common surgical conditions. Such theories were not necessarily based upon the tenets of the particular sect in vogue and each contained some germ of truth which might be serviceably extracted.

In medicine, too, there still remains much to be done. We need that interesting paper on the medical uses of human blood which was promised by Dr. Frank Payne, but was never even begun by him. When was the tongue first employed as an aid to diagnosis, and who first said "Put out your tongue?" We require an historical paper on the various phases in the treatment of phthisis and of empyema; upon the value attached by physicians at different times to the pulse in disease, and of the means adopted for its measurement; of the origin, rationale and decline of bloodletting and, perhaps, no less valuable a disentangling of the various conditions grouped together by the older writers under the terms "miserere" and "ileus." The materials for all these communications lie ready to our hand and are available for anyone who chooses to employ himself upon them.

Midwifery abounds in subjects requiring historical treatment. The whole story has still to be told of the remarkable idea that the uterus was an animal with independent movement, so that it was possible to have "a rising of the mother" or a "suffocation of the womb." The views held at different times as to the actual cause of labour and why the foetus assumes particular positions in the womb might meet with scientific treatment at our hands. And in this connexion we ought to be able to discover the source of those birth figures which run through the mediaeval manuscripts until they appear at last as copper-plate illustrations in "The Woman's Boke" of Eucharius Rhodion. The figures resemble each other so closely generation after generation that they must have a common origin.

There is ample room for a paper on the views held at different times upon the determination of sex and the means used to influence it, and for another upon the conduct of labour and the use of birth chairs. What was thought of the placenta? What treatment did it receive, and on what grounds? Why is the placenta always drawn so large and the foetus so infinitesimally small in the older treatises on midwifery? When did the caul get its reputation as a specific against drowning, and why? What were the social conditions during the

sixteenth century which led to so great an interest being taken in the physical signs of virginity as is shown by the treatises of Pinæus and Melchior Sebizius? Is there any literature about puerperal fever before the time of Semmelweis, or was it considered to be such an integral part of the primeval curse as not to be worthy of consideration?

Particular branches of medicine and surgery also require detailed historical consideration. It is generally stated that the treatment of rupture and ophthalmic surgery were in the hands of specialists by whom the public were badly served. This may have been true in part, but it is certain that the regular surgeons in England gave directions for the treatment of both conditions in their books and showed no disinclination to take under their care patients who suffered from them.

As regards physiology much remains to be done, for we are still in need of a succinct account of the Oxford physiological school in the seventeenth century—meteoric in its course and producing such men as Lower and Mayow—which was quite as wonderful as the rise of a similar school at Cambridge in our own time.

Anatomy is still an almost unworked mine for the medical historian. In every large library there are numerous treatises in manuscript which should be examined with greater care than they have yet received, and we know but little of the methods of teaching by plates and models when dissection was hedged round with difficulties.

The subject of medical education itself will repay further study. Its history in this country usually begins with the foundation of the Royal College of Physicians on the medical side, and with the Union of the Fraternity of Surgeons with the Company of Barbers on the surgical side. More than a hundred years before this union an elaborate attempt was made to establish what is now called "The Conjoint Scheme," by requiring a knowledge of medicine and surgery from everyone who practised. We should like to know more of the project. With whom did it originate? How long did it last? What wrecked it? Then, too, there is the long period of the Wars of the Roses. How was education carried on during this neglected historical period, for carried on it must have been as is shown by the completeness of the methods found in use when the light of history shines upon them again in 1540.

All this I venture to think is unknown and gives promise of work for years to come. But the papers should be presented properly documented not only by references but by actual quotations, partly to enable the reader to draw his own conclusions, which may differ from

those of the writer; chiefly because the passages from authors—especially if they have not previously been printed—can only be isolated with an infinity of trouble by those who have access to first-class libraries. If the passages are quoted in full no one need spend time afterwards in verifying them, whereas a mere reference soon becomes incorrect if it is copied from book to book.

I would stipulate further, that the papers should not be of the dry-as-dust variety as would be the case if they consisted entirely of extracts. The author should not be afraid of working up his material into a continuous story, and he can easily make it interesting by the introduction of such personal details as may present themselves. All the older writers interpolate incidental remarks which lend a human and often a humorous aspect to the matters with which they deal.

There is one other matter to which I should like to draw attention in order to obtain information. The Section contains many members who are competent bibliographers and bibliophiles. Do we know or does anyone know the riches of our Library? What incunabula do we possess? What are our desiderata? There is a good subject catalogue in which the books are arranged with their date of publication, and some of the more interesting books are exhibited in show-cases in the Library. I venture to think that more than this could be done. Books printed in the fifteenth, sixteenth and first half of the seventeenth century might be singled out and placed in cases or perhaps in a room by themselves. It is probable that they would not often be required, but we should then know in what way we were deficient and Fellows of the Society might be stimulated to fill up gaps by the presentation of volumes which were obviously wanting. Something has already been done in this direction, but when printing is cheaper and paper is more plentiful a catalogue of books in our possession bearing dates, say 1480 to 1650, would probably well repay the cost of its issue. With these few words, gentlemen, I make an end, for I know that we have many satisfying Wednesday afternoons before us, thanks to the indefatigable industry of our honorary secretaries who have provided a full programme for the session.

Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

The Evidences of Disease in Shakespeare's Handwriting.¹

By the late RALPH WINNINGTON LEFTWICH, M.D.

THE subject of Shakespeare's handwriting has long been of interest to me. When I was getting up the Shakespeare Memorial in Southwark Cathedral, the Chapter complained to me that they were much worried by the Baconians. I undertook to give them reasons for the faith that was in them, and did so in a pamphlet written in answer to that of Sir E. Durning Lawrence. In this I brought in the subject of evidences from the handwriting. Since then I have spoken at Shakespeare societies in favour of the view to be propounded in this paper, and I made it the subject of my address as chairman of the Fifty-ninth Annual Shakespeare Dinner. I was stimulated to further effort by reading the remarks made by our honoured president in seconding the vote of thanks to Sir StClair Thomson for his address on "Shakespeare and Medicine," at the Medical Society. Colonel D'Arcy Power made some very shrewd remarks on that occasion, and appealed to physicians to decide the question of the influence of disease in the handwriting of Shakespeare. To do this successfully, however, it is not enough to be a physician, one must also be a Shakespearean. As vice-president of three Shakespearean societies, I seem to have been thought worthy of this title; while as the author of a work on "Symptoms" which has arrived at its sixth edition, I may perhaps claim, without immodesty, to be familiar with the symptomatic evidence necessary.

¹ At a meeting of the Section, held March 19, 1919.

We have in all six signatures of Shakespeare: that on the Mountjoy deed, discovered by Professor Wallace and preserved at the Record Office, dates from 1612; that on the Blackfriars purchase deed at the Guildhall, and one of a mortgage deed of the same property, at the British Museum, date from 1613; while three on the will at Somerset House date from 1616. Consequently, they are all specimens of his writing late in life. Besides these, the name occurs in two books: an Ovid's "*Metamorphoses*" (1502) and a Florio's "*Translation of Montaigne*" (1603) (*see* Note 1). These, if genuine, might have been written earlier, and this would explain why they show no sign of the disease with which I shall deal later. The best authorities, however, do not believe that they are genuine. In any case, as there is a doubt about them, I shall leave them out of consideration. Now, although these signatures have been closely examined and scrutinized by palæographers and others, they have never been systematically examined and analysed by any one with a medical training; and nothing but speculative suggestions have been made with regard to their association with disease.

In Shakespeare's time, two styles of writing prevailed, the Gothic (*see* Note 2) and the Italian. He had been taught the Gothic, which bears a close resemblance to German cursive script. It was gradually ousted by the Italian for the good reasons that this was easier both to read and to write. The Germans are very much behind the times in this respect for they still cling largely to the old style both in print and writing characters, and pay for it by the almost universal use of spectacles.

Before going farther I must mention a peculiarity, which has been no doubt noticed by all of you, the abbreviation of the second syllable of the surname as shown in the signatures of 1612 and 1613. The practice seems extraordinary to those who are unfamiliar with the subject; but, as a matter of fact, it was quite common, at that time, with persons whose names ended in "per" and the like, such as Couper, Draper, Roper, and even Shepherd. If you doubt this examine the writing of John Shakespeare's name by the second law clerk and you will see that he wrote it in the same way. The name stops short at the "p," and this may have a mark or be crossed to indicate abbreviation.

Some years ago I devised an International Alphabet of equivalent sounds and I then learnt that, in phonetics, the vowel preceding an "r" in an unaccented syllable is known as the "indeterminate vowel" because the sound is much the same whatever vowel is used. Thus, in the

following words we have all the vowels, each preceding an *r*: attar, otter, nadir, horror, murmur, zephyr. For this reason I feel sure that the second syllable in Shakespeare was unaccented, and that the name was pronounced, at any rate by his fellow townsmen, as *Shaxper*, as indeed it was written by the second law clerk. But this by the way.

Next, I will draw your attention to points which have been commented upon by lay palæographers, and especially by Sir E. Maunde Thompson, formerly Keeper of the MSS., and later Principal Librarian of the British Museum. In an article in "*Shakespeare's England*," to which my attention was drawn late in my investigation, he says that the curve of the capital *S* in the full will-signature is "angular." Dr. Martin, a well-known Shakespearean, who is by profession a barrister, is more explicit and describes the letter as being made up of eight straight lines. Other points noted by Sir E. Maunde Thompson are (2) that the capital *S* of the signature on the second page of the will is made in two sectional strokes with a gap between them. (3) That the first "*a*" in the 1612 autograph is open at the top: to ordinary eyes, however, the fact is hidden by the unwieldy loop of the "*h*" preceding it, and I think the point is still more evident in the second "*a*" of the full will-signature. (4) Thompson describes the last syllable of the surname on the third page of the will as "almost a breakdown." (5) That the "*s*" in the 1612 signature has been omitted.

In the absence of a knowledge of medicine, on the part of these observers, no particular significance was attached to the peculiarities; but when I come to show you, as I shall do, that they are recognized signs of a certain diseased condition, such evidence, unbiased as it was by technical knowledge, becomes of much increased value. Now it would lighten my task very much if we possessed a specimen of the writing before disease had set in (*see* Note 3). Unfortunately this is not the case; but, in compensation, we have two testimonies to its excellence. In the introduction to the first folio, the editors, Hemming and Condell, say: "His mind and hand went together, and what he thought he uttered with that easiness that we have scarce received from him a blot upon his papers"—(i.e., even a blot). Five years earlier, Ben Jonson, in conversation with Drummond of Hawthornden, said: "I remember that the players have often mentioned it as an honour to Shakespeare that in his writing (whatsoever he penned) he never blotted out a line." Now, a bad writer makes both blots and corrections; but we are not dependent upon the testimony of others for we have under our own

eyes a proof that he was able to write at least a word or two well. Look at the "By me, William" of the full will-signature. It cannot be denied that this is exceedingly well written, and I have no doubt that it represents the standard of writing to which the editors alluded. Further, his large output shows that he was a rapid writer, and the combination of speed with clearness accentuates his skill in penmanship. Lastly, whereas, up to 1610 he wrote hundreds of pages of MS. with scarcely a blot, in those before us he made, as you can see, four blots in writing fourteen words (*see* Note 4).

Now, examine the six signatures before you and tell me: Do they in general confirm the favourable testimony of the actors? It must be confessed that they do not; and the verdict must be that had Shakespeare supplied them with their parts written in the general style of the autographs, no such appreciation would have been shown. Moreover, every signature appears so laboured and consequently so slowly executed that it is impossible to believe that the writer of them could have penned with his own hand the great volume of work of which he was the author if his earlier writing had been no better.

In considering the question of morbid influence we are handicapped by two further difficulties. First, that Shakespeare wrote in a script that is strange to us, and I have therefore furnished you with two specimens of the surname as written by law clerks to serve as a standard for comparison. Secondly, that we have to base our conclusions upon three capital and eleven small letters. For this drawback, however, we have the very great compensation that the writing extends over a period of no less than four years. Consequently, it represents different stages of the malady and yields us many more symptoms than any letter of a single date however long. The signature on the first page of the will is so damaged as to be nearly useless to us, and not much importance can be attached to the copy of it made by George Steevens in 1778, since it is impossible that the first stroke of the W could ever have been shorter, or the other strokes finer, than they now are. As far as it goes, however, its characters confirm the conclusion to which I shall come later. The specimen here represented has been magnified. There can be no doubt that the full will-signature on the third page was signed first, as Sir Frederick Madden and Sir Maunde Thompson agree and as indeed is the case even now with testators.

The idea that the signatures show signs of disease is very old, and

some have gone so far as to evolve or concur in a pathetic little account of the scene that took place when the will was signed. It had already been drawn up two months when the poet is said to have developed alarming symptoms; witnesses were hurriedly summoned, and in an almost dying condition he just managed to append these trembling signatures. Now, there is not a shadow of foundation for all this (*see* Note 5). Shakespeare survived the signing a whole month; two witnesses would have sufficed, yet five attended; no solicitor's presence was necessary, yet to bring Francis Collins there, the messenger would have had to travel sixteen miles! Lastly the other signatures would be still unexplained.

Some have suggested that the defects in his writing may have been due to locomotor ataxy, or one or other form of chronic paralysis; but the preamble to Shakespeare's will negatives constitutional illness. The will begins thus: "In the name of God, amen! I, William Shakespeare, of Stratford-on-Avon, gentleman, in perfect health and memorie, God be praised." This is a statement which, if not true would be blasphemous (*see* Note 6). But we are not dependent upon its truth, for the only account of his death, which took place a month after signing, that of the Rev. John Ward, a later vicar of Stratford, is that it was due to a fever—i.e., a disease of short duration. Further, we can exclude as causes of bad writing such conditions as defective education, disablement of the hand through rheumatism or injury, as well as such diseases as are characterized by rhythmic tremor by the fact that the writing, as I observed before, is not *uniformly* bad or tremulous (*see* the William at the end of the will). Many diseases also can be excluded by considerations of age, duration, and association with impaired mental capacity. As regards the last, there is no sign of it during the years that remained to him. Our knowledge of him at that period is very limited, but we know that in 1612 he was a competent witness, that in 1613 he received from the Earl of Rutland a good fee for designing (but not drawing) a symbolic tournament-badge or "impresa" and also bought and mortgaged house property; that in 1614 the Town Council of Stratford directed their clerk to ask Shakespeare to support their action in the matter of the Welcombe enclosures; that in 1615 he not only associated himself with some neighbours in an action to protect their joint rights in the Blackfriars freehold, but that he was specially consulted in London by the solicitor to the Stratford Corporation. Finally, we know that in 1616 he was of testamentary capacity. Moreover, there is no evidence of gradual

mental deterioration in his works. "The Tempest" was produced in November, 1611, about six months before the date of the earliest signature, and far from showing any falling off this play is perhaps unsurpassed in the realm of pure imagination by any other. It is not known when he last acted.

Now, is there any morbid condition in which the handwriting exhibits the abnormalities shown in the Shakespeare autographs without being barred by any collateral considerations? There is one, and only one. It is that known as scrivener's palsy or writer's cramp. I have seen a considerable number of cases in my time, but, since the introduction of the typewriter, the condition has become rarer. Fortunately, we have very close and accurate descriptions of the handwriting of the victims by such authorities as Sir Charles Bell, Sir William Gowers, and Drs. Robins, Poore, Head, Oppenheim, Smith-Jelliffe, Campbell Thomson, Meige, Erb, Romberg, Wilfrid Harris, Aldren Turner, Bury and E. Church, and we can thus draw up a perfectly clear picture of the changes that take place and seek for their presence in the Shakespeare signatures. I have consulted many other writers on the subject, but some deal only with treatment and others describe the writing in general terms only.

Gowers divided writer's cramp into four varieties: spastic, tremulous, neuralgic and paralytic; but it is generally agreed that the classification involves much overlapping. Shakespeare suffered essentially from the spastic form. In this, the pen is not completely under the control of the writer. Against his will, it makes little jerks, unduly long strokes or unintended marks; and though a good beginning may perhaps be made, the hand very soon tires and refuses to write at all. Sir William Gowers says that the general effect is that of a letter written in a jolting carriage, and this, you will agree, is precisely what Shakespeare's writing suggests.

The recognized signs of writer's cramp are very numerous and I will now give them in detail and point out where they can be seen in the signatures. No single writer of the fifteen named gives all the signs; but, in order to make my proof exhaustive, all those mentioned by them collectively have been included, for, favoured by the long period over which Shakespeare's writing extends, all stages are represented. It is no answer to the conclusion to which I shall come, to point to the presence of one or two of the symptoms in other diseases, for a diagnosis is made from the *ensemble* or totality of the signs, and of course we never expect to get them all. We

will take signs derived from predisposing causes in the following order:—

(1) Age and sex. Smith-Jelliffe scheduled 194 cases of writer's cramp, and of these forty-five, or about one-fourth, were between 40 and 50; Gowers, in 151 cases, found thirty-two between these ages. Now Shakespeare was 46 or 47 at the onset. The preponderating sex is of course male, even apart from the occupation fallacy.

(2) Writer's cramp is commonest in those who have written habitually in a cramped hand. In writing Gothic characters the hand is necessarily cramped.

(3) It affects those who have written voluminously. Shakespeare did. The first folio alone contains 1,000 double-column pages and, in addition, there were the sonnets, the poems, and the actors' parts.

(4) The condition may persist for many years. Poore mentions a case of ten years' duration and Gowers one of twelve. In Shakespeare's case, it is still present at the end of four.

(5) The general bodily and mental health is unaffected. This has been already dealt with.

We will next take the signs of writer's cramp as exhibited in the specimens of the handwriting before us. And, here, let me add that even in the living subject there are few other objective signs.

(6) The writing is sprawled across the paper (Head, Gowers). This is very marked in the 1612 and 1616 *a* and *b* signatures.

(7) The letters are coarsened (Robins, Erb, Campbell Thomson). The feature is evident in the 1612 and 1616 *a* letters as well as in the initial letters of 1613 *a*.

(8) The downstrokes are thickened (Gowers, Oppenheim, Thomson). Notice the W and the two "ll's" of the 1612 autograph.

The next four signs are very important because they were pointed out by lay palæographers:—

(9) The upper part of a or u may be open (Robins, Head, Thomson). We have no "o," but an uncompleted "a," according to Maunde Thompson, occurs in the 1612 autograph, following what looks like a great O. This may not be clear to inexperienced eyes, but the open "a" in the surname of the full will-signature is clear enough (see Note 7).

(10) A curve may be made in two strokes instead of one (Poore). This point is clearly shown in the capital S of the second will-signature, where it consists, according to Maunde Thompson, of two sectional strokes with a gap between them. The initial S of the 1613 *b* signature is also suspicious.

(11) A curve may be made by a succession of short strokes (Robins, Poore, Gowers, Church). Maunde Thompson says that in trying "to accomplish the outer curve" (of the capital S), "he failed, the curve becoming angular." William Martin, as I have said, is much more explicit. In a lecture given before the Shakespeare Reading Society, he counted in the capital S eight distinct little strokes, which, combined, formed the curve. Now, how does this compare with a medical description of writer's cramp? Thus: the American neurologist, Dr. Robins, with no thought of Shakespeare present to his mind, says that he counted thirteen of these little strokes in a capital N and fourteen in a capital T. The coincidence is remarkable. The peculiarity is not however confined to this instance for it can also be recognized more or less throughout.

(12) The letters at the end of a word may get more and more slurred till they become illegible (Head, Romberg, Campbell Thomson). Gowers and others describe this as the "sign of the tired hand." The following is the description given by Sir Maunde Thompson: "By me William," he says, "is good; but the hand then begins to fail, the first three letters of the surname are still clearly legible, but are somewhat deformed; then ensues almost a breakdown, an imperfect k and a long s ending in a tremulous finial." This feature, which is perhaps the most striking characteristic of all the signs of writer's cramp and is all but pathognomonic, is especially evident in the full will-signature.

(13) The spasm drives the nib through the paper (Gowers, Wilfred Harris, Meige, Bury, Smith-Jelliffe and Aldren Turner). Now, a quill would not succeed in penetrating parchment and the result would be a blotted letter or a splutter. This sign is plainly visible in the last letter but one of the 1612 signature, in the W of 1613 *a*, and in the bottom loop of the "h" in the full will-signature.

(14) A stroke may be too high or too low (Gowers, Erb). The point is not of much importance, especially in this script; but it is too low in the first I of 1616 *a*, both here and in the drawing made by George Steevens in 1778 when it was less damaged; while it is too high in what looks like a colossal O in the 1612 autograph, but which is really the upper loop of a Gothic "h."

(15) An unintentional mark may be made (Gowers, Wilfred Harris, Erb). There is one below the S of the 1612 signature. It is not a blot, for if you examine it closely, you will see that it is semicircular. The dot within the W is not a displaced dot of the "i" as some have thought, for it is found where an "a" follows the W.

(16) The effects are not uniform ; a word or two may occasionally be fairly well written and the same letter may be written sometimes well, sometimes ill (Gowers, Erb, Oppenheim, Campbell Thomson). This feature excludes a large number of conditions in which the handwriting is defective. It is seen in the difference between the William and the Shakespeare in the third page signature and in that between the two "ll's" in the 1612 and the first 1613 signatures.

(17) A letter is often unlinked to the next (Meige, Campbell Thomson, Oppenheim). This feature is not of much importance. I do not mind confessing that I am sometimes guilty myself ; but unlinked letters can be seen in the second 1613 and the second and third page will-signatures, while, that Gothic script is consistent with joined letters is evident in the writing of the first law clerk.

(18) Tremor (every writer mentions this). Tremor is more or less evident everywhere ; but is best seen in the second 1613 signature. It is of the spastic variety, for passive tremor is practically absent and its absence excludes a large number of diseases.

(19) Omitted letters. None of the medical writers I have referred to mentions this point as a feature of writer's cramp ; but considering the labour of writing in these cases, it is only what one might expect. Certainly Shakespeare sometimes omitted letters ; for the small "s," which in this script is represented by a long straight or curved line, as in the two 1613 autographs, is absent in that of 1612 (*see* Note 8). Some have thought that it is also absent in the full will-signature ; but this is not the case, though the shaky "s" and the "k" are mixed up together.

(20) The pen is dropped (Wilfred Harris and many others). This may or may not have happened, but at any rate the blur over the "l" in the first page will-signature is consistent with its occurrence.

Few people are familiar with the Gothic script of the period and to meet the objection that other Elizabethan writers may show the same caligraphic peculiarities, I have examined the writing of Ben Jonson, Marston, Peele, Bacon, Daniell, Donne, Massinger, Stowe, and many others, and I am certain that none of them suffered from writer's cramp. Moreover, you have before you, as evidenced by the writing of the law clerks, the proof that the vagaries to which I have alluded are absent. Nor is there any evidence of it in the writing of the Warwick solicitor who drew up the will, Francis Collins. The will contains many interlinear corrections and on my visit to Somerset House, I noted that some of these, as well as the signatures, were in paler ink

than that in which the body of the will was written. On waking one morning, perhaps as a consequence of unconscious cerebration, the brilliant idea flashed across my mind: Is it possible that some of these corrections were made by Shakespeare himself during the two months that elapsed between the drawing up and the signing of the will, when it was perhaps left in his possession? In journalistic parlance, what a gigantic scoop would this be for me if it proved true! I hastened to pay another visit to Somerset House; but in the interests of Truth I had to confess to myself that the corrections were not consistent with a diagnosis of writer's cramp and therefore were not written by the testator himself. Moreover, the ink of the most important alteration, that of the date, is quite black. Perhaps the sand, which at that period took the place of blotting paper, was used more promptly where the writing is brownish.

Thus, every one of the nineteen signs collected by me is present and I submit that a diagnosis of writer's cramp is unimpeachable. Every condition precedent, whether of age, of occupation, of chronicity, or of freedom from bodily or mental disease is fulfilled in the history of the case and every objective sign in the handwriting has been demonstrated. It should be a source of satisfaction to us that any misgivings as to Shakespeare's illiteracy have been set at rest by these investigations, for Baconians and others have been hard to argue with.

In our days, the victim of this disorder sometimes succeeds in teaching himself to write with the left hand; but the rule is that this soon shares the same fate as the right and it would be frankly impossible with Gothic script. I may be also asked: Why did he not dictate his plays? Well, it is not given to everyone to dictate even a letter with any facility and many that we receive and that read so well and so glibly, have had as much editing as a parliamentary speech; and you may remember that Goldsmith, having engaged an amanuensis for his "Animated Nature," found himself mute when he wanted to start dictating. Apart from that, only a very clumsy and unreliable form of shorthand was available in Shakespeare's time. Thus, John Heywood, complaining of the piracy of his plays, wrote in 1605:—

"Some by stenography draw the plot, put it in print, scarce
one word true!"

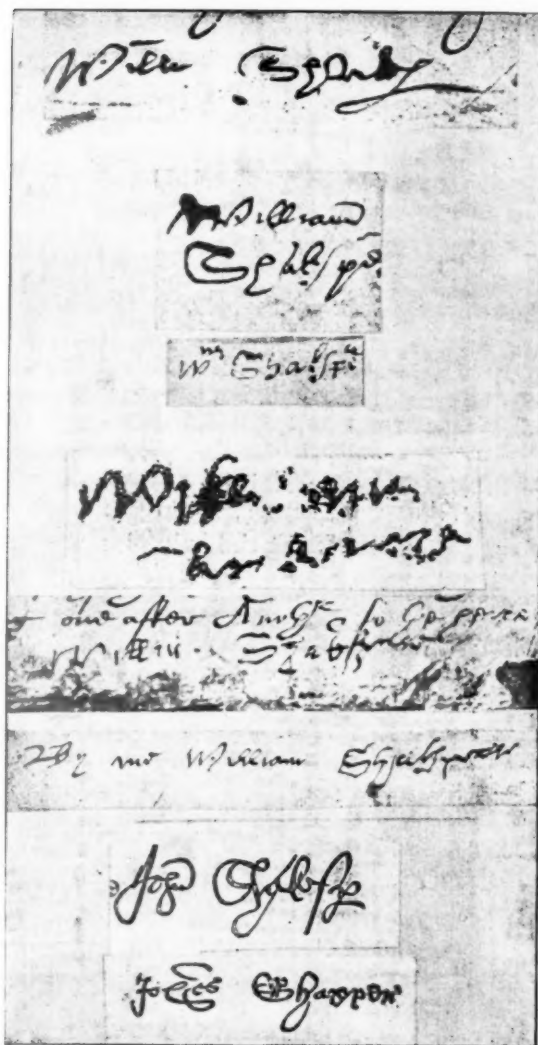
And it is one thing to dictate a letter and quite another to dictate a play; for a play, with its frequent changes of scenes and players, presents something like a maximum of difficulty. Possibly Shakespeare

tried and failed and incidentally this may be the explanation of the fact that when the masque portion of "The Tempest" was added in 1613, it was written by another, probably Chapman. Milton's task, that of dictating an epic was far easier and he, moreover, had had the advantage of a secretarial training.

This, then, is the explanation of the mystery. This, the reason that a healthy man who had devoted himself with the greatest regularity to playwriting suddenly and finally gave it up at the age of 46, notwithstanding that his business interests in the theatres continued. It was nothing less than a tragedy; but he had already given us the finest works in all literature and we can never be too grateful to him and never do too much honour to his memory.

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Specimens in facsimile of Shakespeare's signature. The top signature was written on May 11, 1612; the next signature was written on March 1, 1613; the third signature on March 10, 1613; the fourth signature is on the first sheet of the will; the fifth signature is on the second sheet of the will; the sixth signature is on the third sheet of the will. The will was executed March 25, 1616.

DISCUSSION.

The PRESIDENT: It is a great pleasure to me to hear that a few random remarks I made at a meeting of the Medical Society has led to the production of this paper by Dr. Leftwich, of which the Section may well be proud. I have long wondered why a man of 47 or 48, who had been very successful in London, should have gone back voluntarily to a small provincial town, obviously with the intention of ending his days there, unless he had had some premonition of illness. In the case of Shakespeare there appeared to be no sufficient reason. His intellect was certainly unimpaired, and it is clear from the engagements into which he had entered that he was not brain-weary. Sitting there in the church where he is buried, instead of listening to the sermon, as I should have done, I recalled all the autographs I could remember, and the varying position of the dot over the *i* was ever present. When he was fresh the dot of the *i* was placed in the terminal curve of the *W* in William, but as the writing became more tremulous the dot was placed without certainty. When I got back to London I looked again at the signatures, and it then appeared that the bad writing was the result of disease rather than of illiteracy. I asked my friend Dr. Leonard Guthrie, as a skilled neurologist, with a decided antiquarian bias, to look into the matter with a critical eye, but before he could do so he has been forestalled by Dr. Leftwich, whose paper leaves nothing to be desired. I hope that amongst those who are present this evening there may be some who can speak of writer's cramp from personal knowledge, not because I wish them ill, but because they can then speak for or against Dr. Leftwich's arguments from personal experience.

Dr. F. G. CROOKSHANK: The paper which Dr. Leftwich has just read is one of great interest and importance to the antiquarian and to the Shakespearian student alike. With their points of view I have no competency to deal: but the subject of writer's cramp itself has interested me much since the days when I was house physician to the late Dr. V. Vivian Poore: and the interest has not been diminished by reason of something more than a tendency to the disability itself, which was first manifested after an examination twenty-five years ago. Very probably what we call "writer's cramp" is susceptible of different pathogenic explanations in different cases: but it may be not without relevance to the question of Shakespeare's disability (for disability there undoubtedly was) to recall that, in certain cases at least, the exhaustion is definitely cortical rather than "peripheral," and that writer's cramp, like other professional cramps, palsies and spasms, is apt to obtain when there is a greater measure of conscious cerebration accompanying the carrying out of what, like writing, may be at other times a more or less automatic act, or series of acts. It is the concomitance of (1) attention to writing and (2) thought in composition that exhausts: moreover, writer's cramp, like other so-called neuroses, sometimes manifests itself, almost without precedent warning of overstrain or

over-exhaustion, in those who are the subject of worries and anxieties. One other point: It is a little curious that exhaustion of the cortical writing centres should so frequently, if not always, first show itself by illegibility of the signature—almost the most “automatic” act of calligraphy. It is usually said, by the bye, that writer’s cramp was first differentiated as a “clinical entity” in the early years of last century: but it might be worth while inquiring into the frequency of literary allusions to writing disabilities during the centuries when quill pens only were used. Dr. Leftwich certainly has brought before us an extremely interesting subject for discussion and thought: and his paper calls not only for our most grateful thanks but for our quiet attention at leisure.

Dr. R. HINGSTON FOX: Remembering how personal experience colours creative literature, one would expect to find allusions in Shakespeare’s later writings to the symptoms or phases of nerve trouble, if he was himself a sufferer.

EDITORIAL NOTE.

(1) The “Ovid” and “Florio” signatures have been recently examined and pronounced to be forgeries by Sir E. Maunde Thompson in *The Library* of July, 1917.

(2) The style of handwriting which is here termed “Gothic” was the English cursive handwriting of Shakespeare’s time, which had developed from the cursive writing brought into England from the Continent after the Norman Conquest. It superseded the native Anglo-Saxon script. In the course of the sixteenth century it was gradually giving place to the Italian cursive.

(3) Dr. Leftwich was apparently unacquainted with the monograph “Shakespeare’s Handwriting” (Oxford, 1916), by Sir E. Maunde Thompson, in which Shakespeare’s extant signatures are analysed, and a claim is made in favour of an addition to the MS. play of “Sir Thomas More” in the British Museum, being in the handwriting of Shakespeare.

(4) The editors of the First Folio, when they stated that “we have scarce received from him a blot upon his papers” evidently referred to the general freedom from corrections in Shakespeare’s autograph MSS. (in Ben Jonson’s words “he never blotted out a line”) and not to accidental blots.

(5) There can be little doubt that there was urgent cause for prompt execution of the will, for the rough draft was used for the purpose instead of waiting for a formal engrossment.

(6) The words “in perfect health,” &c., were a common formula in wills of the time; and, moreover, when the draft was written (two months before the execution), it may be presumed that Shakespeare was in good health.

(7) Two forms of the letter *a* were in use in the English hand: the closed *a* like our modern cursive letter, and the open or u-shaped *a*. The latter is used in the 1612 signature (it is the open form but not "uncompleted"). The closed *a* is used in the full will-signature, but the ring of the letter is not perfect through bad writing—it is not the open or u-shaped letter. What Dr. Leftwich calls a "great O" is caused by the tail of the *h* being carried up above the line and forming an arch which links with the u-shaped *a*.

(8) Shakespeare in most instances made use of the Italian long *s* (*f*) in the middle of his surname. (In the second will-signature he uses the English long letter.) It was a common practice at the time to mix the Italian and English styles of letters, but the long *s* (*f*) is the only Italian letter found in Shakespeare's handwriting.

Section of the History of Medicine.

President—Mr. D'ARCY POWER, F.R.C.S.

The Medical Aspects of Montaigne : A Study of the Journal which he kept during his Voyage to Italy, with an Account of his Renal Troubles and Experiences of Mineral Waters.¹

By LEONARD MARK, M.D.

"A pleasant fantazie is this of mine ; many things I would be loath to tell a particular man, I utter to the whole world. And concerning my most secret thoughts and inward knowledge, I send my dearest friends to the stationer's shop.

*"Executienda damus prœcordia—*Pers. Sat., V. 22.

"Our very entrailles wee
Lay forth for you to see."

Essays, Book III, Chap. IX.
Florio's translation.

SYLLABUS.

He starts from his Home near Bordeaux—The Discovery of the Journal—Across France to Vitry-le-François and Plombières—In Switzerland he stops at Basle and Baden—Frequency of his Urinary Troubles—Across the Alps into Italy—Rome—Across Italy to the Shrine of Loretto—First Season at the Baths of La Villa—Excursion in Tuscany—A Second Season at La Villa—Farewell to Rome—Journey Home by Milan and the Mont Cenis.

THE VOYAGE OF MONTAIGNE.

In the year 1580 the Seigneur Michael de Montaigne had reached the age of 48. For some time past he had been much troubled about his health, and had paid visits to several baths in the South of France

At a meeting of the Section, held April 16, 1919.

to get relief from frequent attacks of renal colic and gravel. He now thought he would like to try some of the other famous baths of Europe. He also thought this would give him a way of satisfying the craving he had for more knowledge of other lands, other towns and other people, and that he might perhaps even realize the dream of his life, to see Rome, while his health held out, and while he was still at an age to enjoy life.

The opportunity seemed to have come. The country was just then at peace. There was a pause in the wars of the League, there was a truce between the Catholics and the Huguenots. The peace had allowed Montaigne's financial position to be more prosperous, and he was ready to undertake what would be a costly journey, and to carry it out as comfortably as travelling could be done in the latter days of the sixteenth century. The dangers of the road would be very great, and travelling could only be undertaken in company with a large party, but he soon found some friends ready to join him on the journey.

HE STARTS FROM HIS HOME NEAR BORDEAUX

and goes across France, through Switzerland and Italy as far as Rome, and makes various excursions and visits to baths in Italy, and then returns direct from Rome after seventeen months' absence. All the while he is away he keeps a most copious diary, written in the best of veins, and if it could be, more full of charm than his famous Essays. The personal note runs through it all; no detail, whether about his dealings with mankind or the actions of his own flesh and blood, seems out of place in his pages.

THE DISCOVERY OF THE JOURNAL.

Montaigne's journal was first published at Rome in 1774, one hundred and eighty-two years after the author's death. The manuscript was found by Monsieur de Prunis, a regular canon of Chancelade, in Périgord, who was scouring the country in search of material for a history of Périgord. He visited the ancient Château of Montaigne, then in the possession of one of Montaigne's descendants, the Comte de Segur de la Roquette, to search any archives that might be found. He was shown an old chest which contained papers long since condemned to oblivion. Amongst them he came across the original manuscript. Part of the volume is in Montaigne's own hand, but about one-third of

it is in the hand of his domestic or secretary, to whom he dictated it from day to day, and then put in corrections and additions in his own writing. A few pages of the beginning were missing, and have been lost unfortunately.

It is no exaggeration to say that every page of this work teems with interest. Montaigne is so frank about himself, and so ready to give his reasons for every occurrence, that one is presented with a most perfect picture of him by his own brush. Yet one cannot resist trying to read through the lines and see more thoroughly into his character and habits. One soon learns for instance from the book, that the author is a gourmand, a big eater, although he spends little time over his meals. It is only when he reaches Switzerland that he acquires the habit of sitting a longer time over a repast, both for the greater pleasure of taste and the more serious calls of his digestion. His food is that of the gentry of his time, when meat was the essential basis of a meal. Great quantities of fleshy food were eaten with the help of condiments and mustard, conducive to a good appetite, but likely to favour the formation of gravel. Very few vegetables were eaten. But fruits and wines were taken in abundance, spirits hardly ever except as medicine. At Padua, where he suffered from an excruciating toothache, he used brandy as a mouth wash and gargle to get relief. It has to be noted that Montaigne hardly ever diets himself; even when attacked with fever, he is only happy if he can have a good meal, by way of getting some comfort.

To medical men this journal or diary is especially interesting, as almost from day to day Montaigne mentions the state of his health, mixed up with the other copious details of his travels. This he does to such an extent that it has been said of him that during his journey abroad he spent more time in scrutinizing the contents of his chamber utensil than in going into raptures, like other travellers, over the beauties of the scenery and the interests of the towns which he visited.

The book contains a series of observations of his physical troubles, written with all the preciseness we generally find in a hypochondriac, but the interest generally lacking in such accounts is here redeemed owing to its being compiled by one of the most keen and subtle analysts that the world has ever known. It is easy to see all through what he writes that Montaigne has a great liking for medicine, but a loathing for those whose business it is to practise it. A singular fortune seems to have been his. Here was a man who spent a lifetime in finding

fault with doctors, speaking evil of them, yet one may say that he has been more appreciated by the doctors than by any other class of readers. None know him better or appreciate his writings to the same extent.

Montaigne's company was made up of some young men who were highly connected, who wanted to see something of the world, and go on what was then "the grand tour." His youngest brother and his brother-in-law were of the party, so that, including Montaigne's confidential valet or secretary (to whom he used to dictate his observations), there were six horsemen. They had with them five or six servants, who followed on foot or went ahead, as the case might be, and were in charge of the mules carrying the luggage. They went long distances each day at a walking pace, so their progress must have been rather slow. One can but be sorry that Montaigne had not a more interesting set of fellow travellers. They appear to have had their time taken up with fencing and the pleasures of life, to have shown a marked dislike for books or learning of any sort, and to have been in a great hurry to push on to Rome, where they wanted to enjoy its fascinations according to their own tastes.

ACROSS FRANCE TO VITRY-LE-FRANÇOIS AND PLOMBIÈRES.

Starting from the neighbourhood of Bordeaux in the beginning of September, 1580, the travellers made their way towards Germany by Plombières, the first baths which Montaigne wished to see. After passing Chalons they reached Vitry-le-François, and here our inquisitive traveller started in earnest his discourses upon what he sees and hears. One of his observations, that of the maid who changed her sex, still bears repeating, although so often quoted, and one cannot do better than give you a translation of Montaigne's own words:—

"The story is that of a man still living called Germain, of low condition, without any trade or office, who was a girl up to the age of twenty-two years, seen and known by all the inhabitants of the town, noticed on account of her having a little more hair on her chin than other girls; known for this as the bearded Marie. One day when making an effort to jump she produced male organs, and Cardinal Lenoncourt, then Bishop of Chalons, gave this person the name of Germain. He has not however been married, he has a big and very thick beard. There is still in this town a song in vogue amongst the young girls, who are advised not to take long strides, for fear of becoming males like Marie Germain. They say that Ambroise Paré has put this fact in his book on Chirurgery, as it is quite certain and was also certified to M. de Montaigne by all the most important officers of the town."

The baths of Plombières are the first important ones that he visits, and he spends eleven days there, takes the waters quite to his own idea or liking without consulting any doctor. The custom here is to take two or three baths each day and have meals brought to the baths. The waters are not much taken by the mouth, and then it should only be after a purge. He, however, takes the waters fasting, and gets through as much as nine large glasses a day. He prefers the Bath of La Reine, where the waters taste of liquorice. He only takes a bath every other day, lasting one hour. After the bath he goes in for gentle perspiration. On that day he goes to bed supperless. The only effect of the treatment, according to him, was that he made more urine, as the appetite and digestion were good, and he slept well; but on the second and third days he passed two small calculi, and on the sixth day he had an attack of colic lasting four hours. No doubt, he says, a calculus had passed the ureter and had stopped in the bladder for his further trouble. He adds a copy of the rules prescribed by the Bailiff of the Vosges for the conduct of the baths.

(Montaigne's Journal, p. 57.)

"M. de Montaigne accosted in the said church after mass M. Maldonat, a Jesuit, whose name is famous on account of his erudition in theology and philosophy, and they talked together during and after dinner at M. Montaigne's lodging where the said Maldonat came to see him. Amongst other reasons, because he came from the baths of Spa which are at Liege. He informed him that the waters were extremely cold and that the colder they could be taken, the better. They are so cold that some who drink them shiver and feel horror; but soon after a great heat is felt in the stomach. He took for his part a hundred ounces; for there are provided glasses which hold the measure anyone wishes for. The waters are drunk not only when fasting, but also after a meal. The action of the waters which he described is similar to those of Gascony. As to himself, he said he had observed what strength they had for harm which they had not done him, having drunk them several times while sweating and flushed. He saw by experience that frogs and other small animals thrown into it, die at once; and said that a handkerchief placed over a glass of the said water becomes yellow. They are drunk for fifteen days or three weeks at least. It is a place where accommodation and lodging are very good, and suitable for anyone suffering from obstruction and gravel. All the same neither M. de Nevers nor he himself had become any more healthy by their use."

(Montaigne's Journal, p. 62.)

"Mauvèse, four leagues. A small village where M. de Montaigne had to stop on account of his colic, which was also the cause of his giving up the plan

which he had made of seeing Toul, Metz, Nancy, Joinville, and St. Disier, which are towns scattered along the route, so as to reach the baths of Plombières in all haste."

(*Montaigne's Journal*, p. 66 *et seq.*)

"*Plombières.*—We arrived Friday, 16th September, 1580. The place is situated on the frontier of Lorraine and Germany in a depression between several high and jagged hills, which shut it in on all sides. At the bottom of this valley are several springs which are naturally both cold and hot; the hot water has neither smell nor taste, and is so hot that we can just bear to drink it, so that M. de Montaigne was obliged to shake it from one glass to another. The waters of only two of the springs are drunk. The one which is turned away from the east and which supplies what is called the queen's bath, leaves in the mouth a sort of sweet taste like liquorice and nothing worse, unless one observes very attentively when it seemed to M. de Montaigne that it returned I do not know what taste of iron. The other one which shoots out of the foot of the hill opposite, which M. de Montaigne only drank on one day, is more bitter and one detects a taste of alum in it.

"The custom of the country is only to use the waters for bathing and to bathe two or three times a day. Some take their meals at the bath, where they generally get themselves blistered and scarified, and only use them after being purged. If they do drink, it is one or two glasses in the bath. They considered strange the way in which M. de Montaigne, without taking any medicine beforehand would drink nine glasses, which came to about one pot, every morning at seven o'clock; dined at midday; and the days when he bathed, which was on alternate days, about four o'clock, only stopping in the bath about one hour. And that day he was quite content to go without supper.

"We saw men who had been cured of ulcers and other eruptions of the body. The custom is to spend at least a month there. They specially praise the spring season in May. The baths are little used after the month of August, on account of the coldness of the climate; but we still found company there, owing to the dryness and the heat having been greater and more prolonged than usual.

"This bath was once frequented by the Germans only; but for some years people from Franche-Conté and some Frenchmen come in great crowds. There are several baths, but there is a big and principal one, oval in shape and built in an ancient style. It is thirty-five paces long and fifteen in width. The hot water rises below from several springs, and from above cold water is poured to suit the bath to the wish of the bathers. Places are distributed divided by suspended bars, like in our stables, and planks are thrown over them to keep off the sun and the rain. There are all round the baths three or four stone steps like in a theatre, where the bathers can sit or rest themselves. A singular amount of modesty is observed, and it is indecent for the men to be

otherwise than quite naked, except with a small linen napkin, and for the women except with a chemise.

"We stopped at the said place (Plombières) from the 16th to the 27th September. M. de Montaigne drank the said waters eleven mornings, nine glasses on eight days and seven glasses on three days, and he bathed five times. He found the water pleasant to drink and always passed it before dinner time. He found it had no other effect than to make him urinate. He had a good appetite; as regards his sleep, and his belly, nothing out of the ordinary was aggravated by drinking the water. The sixth day he had very violent colic, more than usual, and he had it on the right side, where he had never had pain except a very slight one at Arsac, without any operation. This pain lasted four hours, and he clearly felt the operation and the passage of the stone through the ureters and the lower belly. The first two days, he passed two little stones which were in the bladder and then occasionally some sand. But he went away from the said baths, believing that he still had in his bladder both the stone which had caused the above mentioned colic, and some other small ones, whose descent he thought he had felt."

IN SWITZERLAND HE STOPS AT BASLE AND BADEN.

Leaving France, he passed through Mulhouse and goes to spend some days at Basle. He is much interested here when he is present at an operation for umbilical hernia on a small child, and observes that the patient is very roughly handled by the surgeon.

The only bathing place he visits is Baden, where he drinks plenty of water but only takes a single bath. He is astonished to find such comfort at the baths, and such a luxurious inn to put up at. One day, he says, "*there were three hundred guests to be fed.*"

He is now in a foreign country, and his curiosity is roused at every step. He even makes a note of some of the smallest things which catch his eye; the heating stoves, the windows, the feather beds in the houses, the preparation of sour-cROUT, the various ways of drawing water from a well or of turning a spit.

SOUTH GERMANY.

To avoid Zürich, where the plague has broken out, he pushes on to Schaffhausen and then enters Germany. His interest in what he sees increases at each stage and becomes keener to get the best insight into the habits and ways of the people. He tries to obey the customs of the country. He even goes so far now as to give up adding water to the wine he drinks as he always did in France, where in the South it is the universal custom. Could his now drinking his wine pure have had

anything to do with the aggravation of his urinary and dyspeptic troubles during the next few months?

FREQUENCY OF HIS URINARY TROUBLE.

A perusal of Montaigne's diary leaves one astonished at the number of references to his health it contains. He carefully mentions that the journey lasted seventeen months and eight days. On twenty of these days he expelled stones of various sizes, and on sixteen days he mentions the passage of gravel or sand in various quantities. If to these thirty-six days are added some fourteen others when he talks of his colic (some references deal with several days), we find that during a period of four hundred and twenty-three days there were fifty bad ones for him. About one day in eight must have been a black one or would have been considered such by an ordinary mortal. One is left with all the greater astonishment at his capacity for enjoying life in spite of his sufferings, his indomitable pluck and constant cheerfulness. Some of his attacks of colic were very severe. He talks of one big stone which got impacted for five or six hours, so that it became necessary to call in the doctor. Turpentine was prescribed with very good effect, also a well-prepared milk of almonds. This seems to have been one of the few occasions when he took any drugs. He goes on in the same page to mention an excellent prescription which was given to him by a Greek patriarch, but which did not prevent him from suffering pain and passing plenty of stones.

ACROSS THE ALPS TO ITALY.

After visits to Augsburg, October 15, and to Munich, he starts south and takes the main road to Italy across the Alps. He goes up the valley of the Inn and, on leaving Innsbruck, he takes "*a ride of ten hours,*" in spite of an access of colic, after which he passes a stone "*of average size.*" Nevertheless he enjoys going over the Brenner Pass. He is much struck by "*the mountains, the inaccessible roads, the insupportable air, the strange customs of the natives and the savage places they live in.*" He reaches Italy with the greatest delight, which is only marred by some altercations (as one gathers on reading through the lines) which he must have had with his travelling companions, who wanted to reach Rome as quickly as possible, and to whom he has to declare that when he went travelling "*he had but one project, which was to wander about unknown places.*"

Our travellers push on towards Rome, pass along the lake of Garda, visit Venice, Padua, Florence, and on November 30 they make their entry into the Eternal City.

ROME.

Here they settle down with the intention of making a long stay, and soon find the accommodation they wanted, in quarters rather more "*comfortably furnished than at Paris.*" Each day Montaigne now makes long notes about what he has seen, or about the people he meets with.

It is often said that a traveller's first impressions of Rome are disappointing, because it takes him a while to grasp the grandeur and the beauty of the place without becoming overwhelmed. Montaigne's diary shows that he did not escape such a disappointment. The first pages, after reaching Rome, contain no account of his raptures about the place, he is too much taken up with his annoyance at the reception he receives in this city, the centre of wisdom and learning. All his books have been seized by the customs "*for examination,*" and amongst them are two volumes of his essays. These were retained, and only returned to him four months afterwards when they had been "*chastised by the opinion of the Monkish Doctors*"; a censure he took into little account. The essays were not burnt or put on the Index Expurgatorius, which might have added to their fame, but could not have made the world the poorer for their loss, for they were already published and becoming known in France. Just before starting on his journey Montaigne was proud to learn that a copy of his work had been graciously accepted by King Henry III of France.

The sufferer's complaint soon recurs, we must again give his own words. It ought to be mentioned that the first portion of the diary is written in the third person, as it was dictated by Montaigne and transcribed in the hand of his confidential valet or secretary. Here is what was written :—

"Twelve or fifteen days after our arrival in Rome, he was very ill, and on account of an unusual flow from his kidneys he put himself under the care of a French doctor, in the suite of Cardinal Rambouillet (the French Ambassador) who with the dextrous help of his apothecary, one day made him take some cassia in large pieces on the end of a knife previously dipped in water, which he swallowed quite easily, and passed in two or three stools. The next day he took some turpentine of Venice, which comes, they say, from the Mountains of Tyrol, two big pieces enveloped in a cachet, on a silver spoon, washed down with one or two drops of a certain syrup with a nice taste; the only effect he

noticed was that the urine smelt of March violets. After this he took on three occasions, but not all following, a certain sort of beverage which had exactly the colour and the taste of almonds: he was told by his doctor that it was nothing else. All the same he thinks that it contained some of the four cold ingredients [cucumber, melon, citral, pumpkin]. There was nothing extraordinary in this attack of malaise but the early hour of the morning, all taking place three hours before his meal. He did not feel what good the almond mixture could have done him; for the same condition went on afterwards; and he had another severe colic on the 23rd [December] for which he went to bed about midday and was there until the evening when he passed a quantity of gravel, and later a large stone, which was hard, long and smooth, and which was five or six hours in its passage through the urethra.

"All this while, since his baths, his stomach had been acting well, and this, he thought, had preserved him from several worse accidents. So he deprived himself of several meals, sometimes dinner, sometimes supper."

He was well enough on Christmas day to attend the Pope's mass at St. Peter's.

He spends nearly five months in Rome, and some 270 pages of his book are devoted to his doings, his impressions, his interviews with the many distinguished persons that he mixes with, for he has brought with him the best of introductions. He of course pays a visit to the Pope Gregory XIII and is much struck by the appearance of this fine old man "of eighty years, as full of vigour as one could wish, free from gout, free from colic, free from stomachache and free from any other trouble; of a kindly nature, showing little passion for the affairs of the world."

The personal note keeps appearing in these pages. One feels for him on several occasions when he mentions how an attack of colic did not stop him from his ordinary actions although he may have passed a calculus.

ACROSS ITALY TO THE SHRINE OF LORETTO.

On April 19 he resumes his peregrinations and goes a long journey across the Appenines towards the Adriatic coast. It is not that he wishes to see any baths, but Loretto, the famous pilgrimage resort, some fifteen miles from Ancona. Here he sees the Chiesa della Casa Santa built over the legendary "sacred house" where Jesus Christ was born, which had been brought here by angels from Nazareth. One cannot gather from the diary whether it was the curiosity of a traveller or the hope of a cure of his ailments which had attracted him to this place. He mentions some of the cures alleged to have

occurred on the spot, and does not depart without leaving a memento of his visit in the shape of a tablet with four silver figures inlaid on it, representing Our Lady, himself, his wife and his daughter.

After a visit to some antique remains at Ancona he starts back across the Appenines, this time by a more northerly route, in the direction of Florence, and pushes on to Lucca where he starts his cure at the principal baths of La Villa. He spends a first season here, lasting a month and a half and makes a thorough study of the waters.

(*Montaigne's Journal*, p. 289 et seq.)

"At Loretto. I spent Monday, Tuesday and Wednesday morning, and left after mass. To mention one experience of this place which interested me very much; I met Michel Marteau, Seigneur de la Chapelle, a Parisian, a very rich young man, with a numerous train. I got a very particular and curious account both from him and from some of his suite, of how his leg was cured as he said at this place; it is not possible to see better or more exactly the effect of a miracle. All the Surgeons of Paris and Italy had failed in his case. He had spent more than three thousand crown-pieces upon it: whilst his knee, swollen, useless and very painful three years ago, more sore, more red, inflamed and swollen so as to give him fever; in this one moment, after all other medicines and relief had been abandoned some days before; whilst asleep, suddenly he dreams that he is cured, and he seems to see a flash of lightning; he awakes, cries out that he is cured, calls his people, gets up, walks about, which he had not done since his trouble; the swelling of the knee subsides, the skin all round the knee is shrivelled and seems dead, he still continues to improve without any other sort of help. And then he was in this state of perfect cure when he returned to Loréto; for it was after another voyage one or two months before that he was cured, and had since been at Rome with us. From his own mouth and from all his people, this is all that one can gather for certain."

(*Montaigne's Journal*, p. 307.)

"*Plan della Fonte*, twelve miles. Rather a bad inn, where is a fountain just above the town of Anchisa, in the Arno valley, which Petrarch talks of and where he is supposed to have been born at a house of which only scant ruins can be found. Anyhow they mark the spot. They were then sowing melons amongst others already sown, and hoped to gather them in August.

"During the morning I had a heaviness of the head and troubled vision like my ancient migraines which I had not felt for ten years. This valley which we passed, was formerly all full of marshes, and Livius maintains that Hannibal was forced to cross it on an Elephant (the only one he had remaining) and on account of the bad season of the year, lost an eye. It is

truly a very flat and low district, and is liable to be overrun by the Arno. Here I would not have any dinner, and repented afterwards ; as it would have helped me to vomit, which is my most prompt cure : otherwise I continue with this heaviness of the head for one or two days, as it now happened to me.

"We reached Florence (twelve miles) by one of the four stone bridges which cross the Arno."

A FIRST SEASON AT THE BATHS OF LA VILLA.

His first season at the baths of La Villa lasted until June 21. He had comfortable quarters with a pleasant outlook over the surrounding hills. Unfortunately he met with little congenial society and few "distractions" except the baths. This makes him give more attention to his journal, and he regrets not to have described his past ailments with more detail, so as to be able to take more care of himself in future. He now starts writing his journal in Italian, by way of improving his knowledge of that language. His observations about the baths are most copious. Each day he records exactly the number of glasses of water which he drinks, the baths and the douches which he takes and the effect derived from them. He goes in for his cure heart and soul, but he treats himself according to his own fashion "against the rules of his country" and to the great scandal of the doctors.

On many days he drinks seven glasses of the water, then he takes as much as $6\frac{1}{2}$ lb. of water in thirteen glasses for three days running. He scrupulously measures the amount of urine passed and is sometimes puzzled when perhaps he notices that its volume is only equal to one-fifth of the quantity of water taken by the mouth. He spends an hour and a half to two hours in the bath. He goes on to take as much as 8 lb. of water. No doubt he overdid things. After a while he takes to complaining of migraine and weakness of the eyes every day after he had had his head doused, so he stops the treatment for a few days. He also complains of sharp pains and cramp which come on in his leg at night, but this happens soon after he had received a present of some choice wines, and one wonders if they were the cause of it. He concludes that the effects of the waters in his own case prove that they do not produce the gravel.

He has already made the observation that his brother, who never before had passed any gravel passed some in his urine one day after drinking the water. So he goes on to wonder what is the real action of those waters and where the sand comes from.

An interesting episode of his stay there was the occasion on which the doctors found themselves obliged to invite Montaigne to be present at one of their consultations and to beg him "*to hear their opinions and their controversies*" because their patient, a young Italian nobleman, nephew of a cardinal "*had decided to abide by his judgment.*" This made him laugh in his sleeve.

His experiences of these baths are so interesting that you must have a translation of some of his own words:—

Montaigne's Voyage (Translation of p. 353.)¹

"On Wednesday I went to the bath. I felt greater heat in the body and had more sweating than usual, also some weakness, and dryness and bitterness in the mouth and I know not what sort of giddiness such as the heat of the waters had brought on me at all the other baths: Plombières, Bagnères, Preissac. This never happened at the baths of Barbotan nor at this bath, except on this Wednesday, either because I went there much earlier than on other days, before my bowels had acted, or because I found the waters much hotter than usual. I was there one hour and a half and I douched my head for about a quarter of an hour.

"I used to do many things against the common rule. I took the douche whilst in the bath, whereas it is the custom to have first one and then the other. I was douched by this same water, whereas there are few persons who do not go to the douches of the other bath, and there try such and such a spring, the first, the second or the third according to the prescription of the doctors. I drank the water, then bathed, then drank again, thus mixing up all the days together, whereas others drink the waters on a certain number of days and then go to the baths for several days following. I did not take note of the length of time, because others drink the water on ten days at most, and bathe on twenty-five days at least with no interruption. I bathed once a day instead of always twice a day. I took the douche for a very short time whilst the custom is to stop there always for at least an hour in the morning and the same in the evening. As to having my head shaved, as they all do, and covering my scalp with a small piece of satin held in its place on the head with a net, my shiny head did not require it."

(Translation, p. 358.)²

"On Thursday, the feast of Corpus Domini, for an hour and more I was in a bath of moderate heat; I sweated very little and I came out without feeling any change. I douched my head for half a quarter of an hour, and

¹ "Montaigne: *Journal de Voyage*," edited by Louis Lautrey, 2nd ed., 1909, Hachette et Cie, p. 353.

² Loc. cit., p. 358.

when I got back to bed, I slept for some time. With this bath and douche I was unusually pleased. I felt on my hands and other parts of the body some slight eruption, and I observed that amongst the inhabitants of the district many of them were scabby, and many children suffered from lactation-crusts. It happens here as elsewhere that what we ourselves, with so much trouble go in search of, is treated by the inhabitants of the locality with contempt. I met many who had never tasted these waters and considered them bad, withall, there are few old people to be met with here.

"With the mucus which I threw off in the urine (which happened to me continually) one could see a lot of sand suspended and enveloped in it. I seemed to feel this effect of the bath, when I held the jet of water applied to the pubes that the wind was driven out of my body. And in truth, I felt suddenly, and clearly, that the testicle on my right side diminished in size, if by chance I sometimes had it puffed up, as happens to me often enough. From this I almost conclude, that such puffiness takes place by means of the wind which becomes pent up in it.

"On Friday I bathed as usual, and douched my head a little more. The extraordinary quantity of sand which I passed continually, made me doubt whether it could have been shut up in the kidneys, for if it had been squeezed together, quite a large ball might have been made out of it; and I supposed that most likely the water had conceived it and brought it forth little by little.

"On Saturday I bathed for two hours and had the douche for more than a quarter of an hour. Sunday I remained quiet."

(*Translation*, p. 438.)¹

"When talking to the country folk, I asked one very old man if they used the baths and he answered that the same thing happened to them that happened to the people who live near the Madonna of Loretto, that they rarely make a pilgrimage there, and the effect of the waters is only seen to favour strangers and those who come from distant countries. Anyhow one thing troubled him very much, which was that for some years past he noticed that the baths did more harm than good to those who used them. He said that the cause of this was that, although in former times there was not a single apothecary on the spot, and that a doctor was rarely seen, now one found quite the contrary; these fellows who looked to their profit, spread the opinion that the baths were of no good to those who did not take medicines, not only both after and before, but also mixed with the water of the bath; which water they would not easily allow to be taken pure. Hence he said that the result which followed was very clear, more people died from these baths than went away cured. And he looked upon it as certain that in a short time they would be in bad repute and get despised by the world."

¹ Loc. cit., p. 438.

EXCURSION IN TUSCANY.

He spends most of the next two months on a tour through the country and visits to Florence and Pisa. It is midsummer, and he suffers a good deal from the heat. The diary contains complaints of his dry mouth, his giddiness, the pains in his side, the incredible amount of sand he passes. He fancies that the light sparkling wines cause his migraine. He talks of quenching his thirst with large quantities of Trebesian wine. He receives presents of wines from friends, which seems to be the usual complimentary offering to a visitor. One day he will not put 'snow in his wine as he does not feel well. Another day he feels overheated, and has such a dry mouth that he eats nothing but fruit and sugared salads. One rather puzzling entry in the diary is when he talks of having colic on the right side, but eats melon, cucumbers and almonds. One wonders which was the cause, and which the effect. He does not think much of the baths of Pisa, and says the waters, which looked turbid, must have acquired their smell and impurity from the outside. He passes more stones, one which from its shape was evidently "*detached from a much larger body ; God knows !*"

Returning to Lucca he begins his second season at the baths of La Villa.

A SECOND SEASON AT LA VILLA.

He returns to La Villa and is much gratified at the ovation which he receives from all his friends there. He begins another course of baths, and for the first day is troubled because he passes red urine and blood. Then he has violent toothache. One morning a stone gets lodged in the canal, and he describes how he went till dinner time without passing any urine, to be able to expel it with a great gush, so that he got rid of the stone quite easily. It was the size of a pine nut.

The journal at this time gives a better insight into his state of mind, and he writes one day :—

"The only rule and the unique science for avoiding the ills which beset a man on every side, at every hour, whatever they be, is to resolve to suffer them humanly and to end them courageously and promptly."

This passage has been much criticized. Did Montaigne want to approve of suicide, or did he wish to condemn it according to some of his more zealous friends ? It is difficult to tell.

He now gets more anxious to know what becomes of all the water which he drinks, how, when he has absorbed nine glasses during the day, he only evacuates half of it by the time he sits down to dinner. He is continually occupied in making up the balance between the quantity of water drunk and the amount of urine.

It ends by this very meticulous man taking a dislike to the Baths of La Villa. He talks of going farther south, to Naples, to try some other famous baths in the way. But his plans are altered by the receipt of good news from France, luckily for him, as it puts an end to his experiments in thermal waters which, at the rate he was going, would soon have been the cause of his leaving his bones in Italy. The news was that he had been named Mayor of Bordeaux, and it was accompanied by a flattering letter from the King of France, Henry III, "commanding him and enjoining him very especially and without delay or excuse to return from Italy and as soon as possible to undertake the charge."

FAREWELL TO ROME.

He leaves La Villa on September 15. At Lucca he is much troubled by noticing that the amount of urine passed is this time double the amount of the water which he has drunk, and concludes that some of the waters of the baths must have remained inside him.

After passing Sienna he sees the Baths of Viterbo, which had a great reputation. He describes how the waters form a foam and a crust which is deposited, and he questions whether these waters when drunk are not likely to become petrified in one's kidneys.

For several days after getting back to Rome he complains of fatigue of the stomach, so he takes his meals apart, in order to eat less. He also has a good deal of headache. When he leaves Rome, on Sunday morning, October 15, he is accompanied as far as the first post by some dozen of his friends and "if I had not started before the hour, to avoid giving this trouble to these gentlemen, there were many others about to come, who had hired horses to do it." Montaigne has now increased in importance, for he has had conferred upon him the title of "Citizen of Rome," to his intense satisfaction.

THE JOURNEY HOME BY THE MONT CENIS.

He makes use of post horses on the journey home, as he is only accompanied by his own domestics, after leaving his brother and friends, who remain on in Rome. His route takes him again through Viterbo, Lucca and Sienna, to Pavia. He avoids going by sea to Genoa, as he fears to get his stomach upset. The road by the coast is unsafe for travellers, so he makes for Milan and crosses the Alps again, this time by Suza and the Mont Cenis. On this journey home, his attacks continue, and as Sainte-Beuve says of him in "*Les Causeries du Lundi*," "he goes on scattering his stones and his gravel on the highroads of Italy." One day by way of testing the strength of his kidneys, he rides at full gallop for two whole posts. He found no harm or lassitude as a result, and the urine was natural.

He rests for a week at Lyons. On November 20 he starts from Clermont for a day's excursion, and ascends the Puy de Dôme, and on reaching the summit he "passed a fairly big stone, large and flat, which was in the passage since the morning and which he had felt the day before. It was neither hard nor soft."

We are now well on into the winter, frequent storms are met with on the way to Limoges. Travelling is unpleasant in the poor, hilly districts of the centre of France. The roadside inns are miserable, there is a want of good wines, Montaigne's headaches are aggravated by the winds and storms. The entries in the diary become more scanty, some days a mere record of the number of leagues ridden and of the villages where he puts up for the night.

The journal comes to an end with the words:—

"On Thursday, feast of St. Andrew, the last day of November, after riding seven leagues, I came to sleep at Montaigne, whence I had started on the 22nd of June, 1580. Thus my voyage had lasted 17 months and 8 days."

We have thus accompanied this interesting man on his travels, one whom Sainte-Beuve calls the wisest Frenchman that ever existed. We have looked into the journal which he kept all the time and forms a most entertaining book. If it has been our lot to draw attention to so many passages which perhaps would be expurgated if the work were Bowdlerized, the excuse is that it is given to interest a special audience. It would perhaps have been easier and more pleasant to entertain you with an account of the other important parts of the book, where

Montaigne deals with the doings of other men, their beliefs, customs and laws, for he is one of those for whom the proper study of mankind is man. Yet of all men, the one he knows best and studies most is Montaigne himself, so it cannot have been waste of time to listen to some of his own observations about his own body.

Such is the journal, written in order to aid his memory, also to provide him with the very precise observations which he made use of later on, to enrich some of the chapters of his Essays, such as those on the eulogium of the bath, on drinking waters, the diversity of customs followed at the baths of France, Germany and Italy, from which he concludes is derived "the confusion and incertitude of medicine." To his chapter on "Experiences" he is enabled to add details about his own health, and about his particular tastes when he is at table or elsewhere.

One admires his scrupulous anxiety to lend himself to the customs of other countries, his desire to understand everything, for he "took all knowledge as his portion," like his great contemporary Bacon, who must have written these words at the time that Montaigne was on his journey.

One would like to have had him with us here to-day, knowing the keen desire expressed in his Essays, "to bring round those that he confers with to talk of those things that they know best."

Dr. F. PARKES WEBER: A volume could easily be filled with comments on the medical aspects of Montaigne's journal, as so admirably sketched out in Dr. Leonard Mark's interesting paper. Montaigne suffered from "showers" of urinary gravel, and he shrewdly suggested that some of the gravel might be formed in the urine itself, when it had left the kidneys. After his return from Italy he lived for many years and did much conscientious and public-spirited work as Mayor of Bordeaux. Montaigne's remarks as to the kindly or benevolent appearance of Pope Gregory XIII are somewhat remarkable, when we remember the part played by this pope in regard to one of the most dreadful religious and political crimes recorded in history—the massacre of St. Bartholomew's Eve, in 1572; but he may have been bigoted enough to think it was for the best. An Italian medal commemorating this event has the bust of Pope Gregory XIII on the obverse, with the signature of the medallist Federigo Bonzagna, called "Parmigiano." On the reverse the Protestants are represented being slaughtered by the destroying angel, and the legend is: "Ugonotorum strages, 1572." Many re-struck examples and later copies of this medal exist, but the originals are scarce. The massacre of the Huguenots is commemorated also in the same spirit by Vasari's fresco in the Sala Regia of the

Vatican at Rome, though the inscription under the painting has been obliterated. In spite of sceptics as to the efficiency of treatment by mineral waters and baths, the health resorts visited by Montaigne still flourish. In recent years Plombières in France (Vosges) has become still better known in England by the use at Harrogate and elsewhere of what is known as the "Plombières treatment" (including the Plombières "douche horizontale" for lavage of the large intestine). The Bagni-di-Lucca (of which Villa forms part), which had been resorted to in 1245 by the enlightened Emperor Frederick II, and long after Montaigne's time were visited by Byron, Shelley and Heine, are still well known, though possibly many visitors from Florence and other parts of Italy come chiefly for recreation and "change of air." Baden in Switzerland is frequented in the season, though not still famous for the particular kind of "gaiety" of life described in 1416 by the great Italian scholar and Papal Secretary, Poggio Bracciolini, in a letter to his friend, Nicolo Nicoli.

Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

Note on Celsus's Operation of Lithotomy.¹

By CHARLES GREENE CUMSTON, M.D.

(Geneva, Switzerland.)

"Cum jam eò venit (the calculus), et super vesicæ cervicem sit, juxta anum incidi cutis plaga lunata usque ad cervicem vesicæ debet, cornibus ad coxas spectantibus paululum: deinde eâ parte, quâ strictior ima plaga est, etiamnum sub cute, altera transversa plaga facienda est, quâ cervix aperiatur, donec urinæ iter pateat sic, ut plaga paulo major quàm calculus sit."—AUREL. CORN. CELSUS, lib. vii, edit. ALMELOVEEN.

"Quum jam eo venit, incidi juxta anum cutis plaga lunata usque ad cervicem vesicæ debet, cornibus ad coxas spectantibus paulum; deinde ea parte qua resima plaga est, etiamnum sub cute altera transversa plaga facienda est, qua cervix aperiatur, donec urinæ iter pateat sic, ut plaga paulo major, quàm calculus sit."—AUREL. CORN. CELSUS, lib. vii, cap. xxvi, edit. DAREMBERG, Leipzig, 1859.

THIS passage of Celsus has been translated and commented upon in the most varied ways for the past two centuries, and still none of the translations satisfy me, neither can I offer a suitable one. In all, it is assumed that Celsus intends to convey the idea of an oblique or curved incision, but whose horns and concavity are directed towards the same side, but in all the Latin texts with which I am familiar there is *ad coxas*, that is to say, the thigh bones on the ischii, which form part of this portion of the skeleton, and which Celsus nowhere designates by a particular definition.

Of course the incision is crescentic in shape, and made above the anus with the horns directed *upwards or downwards*, and this is the

¹ At a meeting of the Section, held November 20, 1918.

point which I maintain is impossible to interpret correctly from the various Latin texts.

Védrènes, in his French version of Celsus (Paris, 1876), says: "*Cornibus ad coxas spectantibus paulum* means directed towards the coxal bones, towards the groins, therefore upwards" (note 7, p. 679), but I am not prepared to accept this version as final. That in all probability the upward direction of the horns of the incision is the correct one I am bound to admit, but the downward direction appears to me as not improbable. However, in favour of the upward direction of the horns of the incision, it must be recalled that the crescent-shaped incision of the perineal integuments is followed by a transversal one, as is indicated by the text *qua strictior ima plaga est*, which indicates that this second incision should be made in the *deepest* part of the first or crescentic-shaped incision, rather than at its lower portion, as some have inferred.

In Daremberg's text the exact position of the second incision is indicated, *qua resima plaga est*, in the concavity of the first incision.

Whether or not the concavity of the perineal incision be directed upwards or downwards, it is logical to assume that, according to the Latin texts, the incision is a crescentic one in front of the anus, and that the second incision is transversal and made in the middle portion of the crescentic incision down to the vesical neck.

The transversal incision is unquestionably bilateral, and not a lateral or median vertical incision of the urethra as some have maintained.

A Contribution to the History of the Surgical Treatment of Aneurysm, from the Notes of Dr. Charles T. Maunoir, of Geneva, made during the year 1802.¹

By CHARLES GREENE CUMSTON, M.D.

(Geneva, Switzerland.)

At the commencement of the nineteenth century, surgeons had practically given up all the ancient therapeutic measures for controlling hæmorrhage, and resorted almost entirely to ligature of the bleeding

¹ At a meeting of the Section, held January 15, 1919.

vessel. The vessel was freed from all surrounding tissues before the ligature was applied, because it had been proved both by animal experiments and also, unfortunately, in man, that if some of the surrounding structures were comprised in the ligature with the artery, secondary hæmorrhage was very prone to occur.

Direct ligature, although efficacious when the vessel was completely divided, was found ineffective when the solution of continuity did not involve the entire circumference of the vessel, and serious secondary hæmorrhage was the result.

The means of preventing this accident was to ligate above and below the opening in the vessel and then to divide it completely between the ligatures. This method is unquestionably due to Dr. Jean Pierre Maunoir (1768-1861), a famous Geneva surgeon, who first referred to it in his work entitled: "*Memoires physiologiques et pratiques sur l'anévrisme et la ligature des artères*," Genève, l'an 10 (1801). This work was one of his earliest contributions to surgery. His brother, Charles T. Maunoir (1775-1830),¹ whose notes form the substance of this short contribution, says that no matter what reasons he might have had for adopting his elder brother's method, he nevertheless remained in doubt as to the advantages that it offered, and when he compared it with John Hunter's technique, he found it difficult to pass judgment and to give his preference to either one or the other procedure. However, after an experience of a few years, Charles Maunoir became a firm believer in the teachings of his brother Jean.

On April 12, 1802, Mr. Young introduced young Maunoir to Mr., afterwards Sir Astley Cooper, who was about to operate for an aneurysm of the popliteal according to the elder Maunoir's method. The patient was a sailor, aged 32. The tumour was in the right

¹ Charles Théophile Maunoir was born at Geneva March 13, 1775 (Choisy says May 13). He was Doctor of Surgery (Paris, 1804) and Adjunct Professor of Anatomy and Chemistry at Geneva in 1810. He was nominated Surgeon-in-Chief of the Geneva Hospital in 1817, which post he was compelled to resign on account of ill-health in 1825 (Choisy says in 1826). In 1817 he was made Honorary Professor of Anatomy. Soon after his retirement from hospital practice Maunoir was obliged to give up his private practice, retiring to the little village of Mornex, where he died on February 23, 1830. Maunoir's principal contributions to surgical science are:—

(1) "Sur la section de l'artère entre deux ligatures dans l'opération de l'anévrisme," Dissertation, Paris, 1804.

(2) "Observations sur une plaie pénétrante de l'artère axillaire gauche guérie par la ligature et la section de l'artère," *Ann. de la Soc. de méd. prat. de Montpellier*, 1808.

(3) "Une plaie pénétrante de l'abdomen compliquée de l'issue d'une portion considérable de l'estomac," *Idem*, 1809.

(4) "Nouvelle méthode de traiter la sarcocèle," Genève, 1820.

popliteal region, and the size of a duck's egg, blue in colour, but gave rise only to weak pulsations. Mr. Cooper made an incision about 3 in. long over the internal aspect of the thigh at its middle, following the direction of the posterior border of the sartorius muscle. The dissection was long, but finally the femoral artery was exposed, and after considerable difficulty (because the incision was too short) it was dissected from the surrounding structures. He used both a sharp knife and a dull one made of silver, the latter when not too near the vessel. After a grooved director had been passed under the artery, it was freed from the vein, after which a blunt needle with two waxed ligatures was passed under the artery along the grooved director. The ligatures were tied about $\frac{1}{2}$ in. apart, and the vessel was divided with the scalpel, cutting down on the director. As the dressings were about to be applied it was found that the distal ligature had slipped, and a hæmorrhage ensued. With some difficulty the vessel was caught in strong dissecting forceps and ligated. Just as the dressings were to be applied, it was found that the proximal ligature had given way. Compression was made in the groin and a ligature applied. The incision was closed by strips of adhesive plaster.

On May 7, the aneurysm was smaller and softer, and a few days later some blackish pus was given exit with a lancet. The patient left the hospital on June 7 in good condition, although Maunoir says that he still limped a little.

Maunoir points out that the reason of the hæmorrhages after completion of the operation was due to the fact that the skin incision was not long enough, which made proper exposure of the artery difficult, and that the ligatures were placed too near together.

In the early part of May, 1802, Mr. Cooper operated on a cab-driver for a popliteal aneurysm, but he placed his ligatures farther apart than in the preceding case, and before cutting the artery he pierced the vessel below the proximal and above the distal ligature with threaded needles, and tied them together with a double knot. This was done to prevent slipping of the ligatures, but Maunoir points out that this procedure is quite useless if the ligatures are properly tied and sufficiently far apart. He further says that should the ligatures slip, the thread transpiercing the vessel would retain them in place, but would not prevent hæmorrhage from occurring. This patient left the hospital on June 7 without a limp, although the wound was not completely cicatrized.

Maunoir mentions a third case of aneurysm, this time of the

brachial artery, in which Mr. Cooper divided the vessels above the aneurysm between two ligatures. The operation was perfectly successful, the patient recovering more rapidly than the two previous ones.

Under the date of June 16, 1802, Maunoir mentions a case that Mr. Abernethy showed him of a female, aged 55, with a large aneurysm of the peroneal artery. Two days later the popliteal artery was cut between two ligatures, but as Maunoir says, "the wound promptly suppurated, and although there were no pulsations in the aneurysm, it had increased greatly in size. At autopsy, an aneurysm of the posterior tibial was found in a state of suppuration, and the tibia was extensively necrosed.

Maunoir accompanied Mr. Cooper on a visit to Paris, and on his way back to London the young Geneva surgeon passed ten days at Antwerp. He explained to the medical men of that city the reasons why he considered his brother's operation for aneurysm superior to that of Mr. Hunter, but they were sceptical. Maunoir then proposed to make some comparative experiments on the ligature of arteries, which was accepted. A large dog was procured, and both femoral arteries were ligated; on one side two ligatures were applied and the vessels divided between them, on the other a single ligature was applied. The distance between the two ligatures was 1 in. The side on which the single ligature was applied was operated on by M. Sommé, one of Desault's students. A few days later Maunoir left for London without knowing what the outcome of his experimental work might be, but a few days after his arrival in town he received the following letter:—

" Anvers, le 15 août, 1802.

" MONSIEUR,

" Vous avez désiré connaître l'issue de nos opérations sur le chien, et nous nous empressons de vous satisfaire.

" Il a été assez bien portant pendant les cinq premiers jours, il faisait parfaitement ses fonctions, mangeant et buvant bien, même un peu trop pour son état qui aurait demandé une diète plus sévère. On a cherché à voir les plaies pour couper les fils des sutures, si elles eussent occasionné trop de tiraillement, mais l'animal grondait dès qu'on l'approchait, et nous n'avons pas jugé à propos de satisfaire notre curiosité. Le matin du sixième jour on alla le visiter comme de coutume, il était mort et baigné dans son sang.

" Nous procédâmes de suite à l'examen des parties. Le plaie du côté droit, où la section de l'artère avait été faite entre deux ligatures, suppurait dans une assez grande étendue; ses bords étaient écartés, les fils ayant coupés la peau

vers le milieu de l'incision. Les ligatures se sont détachées facilement; la rétraction de l'artère, ou l'intervalle qui existait entre les deux extrémités coupées, était d'un pouce ou quatorze lignes; le canal n'était pas encore oblitéré à l'endroit des ligatures, nous y avons passé un stylet, et après avoir disséqué et enlevé l'artère, nous l'avons conservée. L'hémorrhagie n'a pas eu lieu de ce côté.

"Nous avons examiné plaie du côté gauche, où la ligature a été faite sans section de l'artère; les bords en étaient rapprochés et recollés dans presque toute l'étendue de l'incision; un écartement d'un demi pouce environ donnait issue à un caillot de sang; l'ouverture étant agrandie, il s'est présenté un caillot fort épais, qui ne nous a plus laissé de doute que c'était de ce côté que l'hémorrhagie avait eu lieu. Nous présumâmes que la ligature trop serrée avait coupé l'artère, et nous cherchâmes à vérifier nos conjectures: le vaisseau fut mis à découvert avec précaution; nous vîmes que la ligature entourait encore l'artère qui était entière à cet endroit, la ligature étant relâchée bien loin d'avoir coupé l'artère; mais il y avait, un demi pouce environ au-dessous de la ligature, une ouverture ou crevasse au vaisseau, qui comprenait au moins les deux tiers de son diamètre. Les tuniques, en se retirant, avaient formé un trou ovalaire plus étroit que le diamètre de l'artère. Nous avons commencé à introduire un stylet du même diamètre que celui de l'artère; il était parvenu, en passant sous la ligature, jusqu'à ce trou, où il fut arrêté. Pour conserver cette pièce en entier, il a fallu employer un stylet plus mince, qui a pénétré ensuite à la partie inférieure du vaisseau dont l'ouverture m'était pas rétrécie.

"Comment expliquer cette rupture? Est-il présumable que la ligature s'étant relâchée, le sang ait voulu reprendre son cours naturel, et que l'artère se trouvant déjà rétrécie, les tuniques ayant perdu leur élasticité elles se soient rompu: ou d'après l'opinion de M. Maunoir, y aura-t-il eu rétraction à l'artère à cause de la ligature, et cette rétraction aura-t-elle causé une crevasse par où le sang sera sorti? Ce qui pourrait en quelque sorte confirmer cette hypothèse dans le cas présent, c'est que cette crevasse était disposée de manière à indiquer l'effet d'une cause qui aurait agi en même temps sur les parties supérieure et inférieure à l'ouverture ou crevasse du corps de l'artère, de façon qu'on pourrait soupçonner que la permanence de cette cause aurait infailliblement opéré la division de la totalité du vaisseau; ou enfin aurait-on blessé l'artère pendant l'opération? Mais il eut été facile de s'en apercevoir. Au reste, quelle qu'en soit la cause, il y avait une rétraction bien sensible dans les parties divisées de l'artère, quoiqu'elle ne fût point en entier.

"Nous nous proposons de répéter l'expérience en faisant seulement la ligature sans section, et nous vous rendrons compte du résultat.

"Agréez nos salutations amicales,

(Signed) SOMMÉ, chirurgien-major de la 76^e demi brigade.
P. VANDENZANDE, Prof. de chimie et de physique.
A. DEKIN, Prof. d'histoire naturelle."

The day following his return to London, August 25, 1802, we find Maunoir with Mr. Cooper, who was to perform an operation on the left popliteal at Guy's, on a patient aged 40, of strong constitution. The artery was compressed at the groin, and an incision, this time 5 in. long, was made above the middle of the thigh, over its internal aspect. The vessel was promptly exposed and separated from the vein and nerve by blunt dissection. Two ligatures, 1 in. apart, were applied and tied, but Mr. Cooper again resorted to transpiercing the vessel with silk, as in the operation already referred to. The vessel was then divided. Although the wound still suppurated a little at the beginning of October, the patient walked without a limp.

It would seem that Mr. Cooper had followed Maunoir's advice in this operation, since he made a long incision and applied the ligatures much farther apart.

On September 3, Mr. Lucas invited Maunoir to be present at Guy's Hospital at an operation on a patient aged 36, for "a tumour occupying and extending beyond the right popliteal cavity," with swelling of the surrounding parts. Pulsation was very evident in the tumour. The incision was begun above the lower third of the thigh, on the anterior border of the sartorius muscle, and measured 3 in. in length. Mr. Lucas applied two ligatures to the vessel, but as they were too near together it was decided not to divide the artery between them. The ligatures were tied with such force that Maunoir was fearful that the vessel would be cut through, but this did not happen. The result of the operation was that the leg became gangrenous, and the patient died on September 12 from sepsis.

Returning from Tottenham with Mr. Cooper, on September 21, 1802, Maunoir went to Guy's Hospital to witness an operation for aneurysm that the London surgeon was to perform. A young man, aged about 26, had cut his thigh with a wood-knife, which resulted in a fearful hæmorrhage on the day before. When he was brought to hospital Mr. Lucas wished to amputate at the thigh, which apparently the patient refused. That evening the patient had a very considerable hæmorrhage, and Mr. Cooper had been sent for and decided to ligate the artery at once. The wound, which was parallel to the vessel, was enlarged, and, it should be remarked, was at the point of election indicated by Jean Maunoir for the ligation of the vessel in cases of aneurysm. Mr. Cooper exposed a vast clot which he removed, and then found that the artery had been dissected by the blood to the extent of some 2 in. or more. Another smaller clot was found

occluding the solution of continuity in the vessel walls. A ligature was placed above and below this and the vessel divided between them. The patient progressed favourably until October 1, when a free hæmorrhage obliged Mr. Cooper to open up the wound. He found both ligatures loosened, both arterial ends contracted, and giving issue to the blood. The artery was more freely exposed by enlarging the incision in order to ligate and cut both ends of the vessel in healthy tissue. After this had been accomplished, another hæmorrhage occurred in the space between the two cut and ligated ends of the artery, coming from a collateral given off by the femoral above the proximal ligature. This vessel was ligated.

Maunoir remarks that the good effects of complete division of the artery between two ligatures were "impaired from the inflammation of the wound, which prevented the divided vessel from retracting, as is the case when it is divided in healthy tissues, and the hæmorrhage would probably not have occurred if the artery had been ligated some distance from the ravage occasioned by the wound and by the blood which accumulated around it."

After this the patient improved and "regained a little colour," and appeared to be on the road to recovery.

Maunoir expresses regret at not having been able to follow the case to the end. The last time he saw the patient was on October 9, 1802.

If I have brought to your notice the notes and reflections of the young Geneva surgeon made during his stay in London in the year 1802, it is merely because it occurred to me that they might be of some interest from the fact that they show the work of two great men, Cooper and Abernethy, as seen through other eyes, and also give us an insight into practice in the days when English surgery was developing into the great school it represents at the close of the year 1818.

Section of the History of Medicine.

President — Sir D'ARCY POWER, K.B.E., F.R.C.S.

St. Isidore of Seville and his Book on Medicine¹

By G. R. J. FLETCHER, M.R.C.S.

ST. ISIDORE was a compiler of the general knowledge of his time and his encyclopædia contains among other subjects those of medicine and the physical sciences. The *Etymologiae*, with its fourth book on medicine, enjoyed a great popularity for so many centuries that the medical portion may well claim some share of our attention. One might suspect that his "De Medicina" only survived because it formed part of the *Etymologiae*, were it not a fact that as late as the sixteenth century it was the subject of separate commentary. The British Museum possesses a copy in black letter, *Liber Quartus Etymologiarum Sancti Isidori Hispalensis, qui est de Medicina. Cum interpretatione seu commentario Domini Simphoriani Champerii, Lugdun. [1508].*

Isidore was born at Carthagera in Spain about the year 560. Severinus his father had been banished from Carthage, when that country was ravished by Agila, king of the Goths, in 552. Severinus, his wife and son, Leander, came to Carthagera; there Isidore was born. Another tradition makes the family Hispano-Roman. Isidore's parents died while he was yet young and his education was undertaken by his brother Leander, now Bishop of Seville, who had established in that town a cathedral school, the first of its kind in Spain. At this school, according to his biographers, Isidore acquired a knowledge of Latin, Greek and Hebrew. Whether he ever had more than a smattering of Greek is doubted by his modern critics.

¹ At a meeting of the Section, held March 19, 1919.

Spain, whose population was orthodox in religion, had suffered persecution at the hands of its Arian Gothic rulers for nearly two hundred years. Leander, a man of force and the chief of the orthodox party against the Arians, undertook a journey to Constantinople to seek the aid of the Emperor. There he became the friend of Gregory the Great and translated that Father's "Morals" into Latin for the use of the Spanish clergy. At Constantinople Leander came in contact with the relics of the old classical culture and, determined that what was good in it should be available for the education of his priests, on his return established the cathedral school at Seville.

In 586 King Reccared came to the throne, was converted by Leander to the orthodox faith and in 587 religious peace was secured for Spain. Leander died in 599 and Isidore succeeded him as Bishop of Seville.

To put briefly the historical setting of Isidore. With the extinction of the Roman Empire by the Goths in 476, the ancient institutions and classical learning were fast disappearing. Classical paganism was extinct, its last traces above ground belong to the age of Theoderic, 493-526. Philosophical paganism lingered on until Justinian in 529 suppressed the schools at Athens, the chief "university" of classical antiquity and the last refuge of philosophical paganism. A year earlier, 528, St. Benedict had founded the monastery of Monte Cassino which was to have so large a share in the preservation and diffusion of the monuments of ancient culture, including those of medicine. In 538 Cassiodorus, to improve the education of the clergy in South Italy, founded his monastery at Viviers (Vivarium) and according to its rule the transcription of ancient MSS. was to be a particular care of the monks. About 560 Isidore was born. Three years later St. Columba was crossing from Ireland, the first of that succession of Irish missionaries who for the next hundred years carried not only Christianity but a highly developed indigenous culture to Western Europe. It appeared at one time as if Celtic culture would hold permanent sway over the whole of Northern Europe, in fact its intellectual and artistic influence was in full activity until the eleventh century.

In Spain a new civilization was being evolved from the blending of the racial elements which made up its population. In the earlier years of the Empire, Spain had been thoroughly Romanized and in its culture was little inferior to Italy. Its language and literature were Latin. Many of its sons had won distinction, the two Senecas, Lucan Quintilian, Martial, Hyginus, Pomponius Mela, Columella, Orosius,

and the Emperors Trajan and Hadrian. For nearly two hundred years, however, the Goths had been in supreme control and their contempt for learning had brought destruction to the old civilization. Isidore realized that the spiritual and material welfare of the nation depended on the full assimilation of the foreign elements and for this purpose he employed all the resources of religion and education. He made Seville an educational centre and encouraged the establishment of cathedral schools elsewhere. In 633 the Fourth National Council of Toledo, at which Isidore presided, passed a decree ordering these schools to be organized in every Spanish diocese. At his own school in Seville, the study of the Seven Liberal Arts and Greek and Hebrew were prescribed while interest in the study of medicine and law was encouraged. Long before the Arabs had awakened to an appreciation of Greek philosophy, Isidore had introduced Aristotle to his countrymen. He was the first Christian writer to attempt the task of compiling a "summa" of universal knowledge. This, the *Etymologiae*, is an encyclopædia epitomizing all ancient learning as well as that of his own time. Many fragments of classical culture which would otherwise have been lost are enshrined in its pages. The work sprang into immediate popularity and gave a new impetus to encyclopædic writing which bore abundant fruit in the Middle Ages. The influence of Isidore on the educational life of the Middle Ages was immense. The eighth Council of Toledo, held in 653, seventeen years after his death, calls him "the extraordinary doctor, the most learned man of the latter ages:" Montalambert describes him as "le dernier savant du monde ancien." Braulio, Bishop of Saragossa, his friend and contemporary, at whose request Isidore compiled the *Etymologiae*, says in his preface to that work, "Isidore a man of great distinction . . . in him antiquity reasserted itself, or rather our time had in him a picture of the wisdom of antiquity . . . God raised him in recent times, after the many reverses of Spain, I suppose to revive the works of the ancients that we might not always grow duller from boorish rusticity."

Isidore, the last of the Latin Fathers of the Church, died A.D. 636. The Church canonized him as a Saint, and Dante admitted him into the select company of the "Paradiso."

The literary output of Isidore was enormous. To the student of the Natural Sciences and Medicine the interest lies in certain books of the *Etymologiae*—Book IV, on Medicine; Book XI, on Man and his Parts; part of Book III, on Astronomy; Book XIII, Meteorology and the Elements, Healing Springs; Book V, The Seasons; and Book XXII,

on Diet. In his work "De Natura Rerum," he gives his view of the physical universe: in "De Ordine Creaturarum" we find the same subject treated. In the "Libri duo Differentiarum" we have the constitution of man, similar to and supplementing Book XI of the *Etymologiae*. In the "Sententiarum" we have the microcosm explained by the macrocosm.

One word with regard to "De Natura Rerum," a very popular work in the Middle Ages. This is a manual of elementary physics, composed at the request of King Sisebert, to whom it is dedicated. In the preface Isidore says that he has consulted not only Christian but pagan writers. There has been much misunderstanding by many modern writers regarding the condemnation of pagan philosophy by some of the Fathers of the Church. One cannot tell here in full how some of the early Fathers in an attempt to further their apologetic work among the pagans tried to set forth Christian teaching in the terms of Greek thought: how at Alexandria, the heart of the movement, speculative thought passed all bounds and became the mother of serious heresies: how in consequence the Eastern Fathers viewed the study of pagan literature with grave suspicion, and the Western Fathers in fright banned it absolutely. The ban was never strictly observed, and in time, when paganism was a dead force and only a memory, the restriction was practically disregarded. As far as Isidore was concerned he adopted the opinion of St. Augustine, whose words he quotes (*Etymologiae* I, 43, i). "The histories of the pagans do no harm when they speak of what is profitable," and no Christian writer either before or after him showed a more liberal mind in this respect: in fact the essentials of the *Etymologiae* are derived from the pagan and not the Christian side of Latin tradition. "De Natura Rerum" is the only work in which Isidore regularly notifies in the text the sources of his information. His principal authorities are St. Ambrose, St. Augustine, St. Jerome, the Pseudo-Clementine Recognitions, Suetonius, Solinus, Hyginus, Macrobius, Aratus, Cicero, Pliny, Lucretius, and of course the Servian Commentary on Vergil. Ptolemy he knew at least by reputation through Cassiodorus, whom he quotes in *Etymologiae*, lib. III.

The main thesis of this work is the Kosmos, as seen in the first chapter of Genesis, interpreted through an adaptation of Hellenic thought. Isidore draws largely on the Hexameron of St. Ambrose, who in turn was dependent on the Hexameron of St. Basil, and Basil again owed much to the views of his teacher Origen. It may be

noted in passing that Basil, according to the testimony of his friend and admirer St. Gregory Nanzianzen, possessed a knowledge of medicine among his many accomplishments.

The *Etymologiae* or *Origines* takes its name from the subject matter of one of its books. These, twenty in number, comprise an encyclopædia or dictionary of all knowledge: "about all that ought to be known," says Braulio, their editor. The work is a compilation from a large number of authorities, many of them centuries old; Isidore's own personal view is not given, he is content to give the views of others, sometimes, but rarely, naming the sources of his information. The object of the *Etymologiae* apparently is to give by way of a vocabulary the definitions of the technical terms employed in the arts and sciences. It follows the traditional principle of classical education that the stepping stone to knowledge is by way of words explained by reference to their origin. Isidore's literary style is simple and easy to read, but not classical; he writes in the ordinary language of his day, and shows the imperfections inherent in an age of transition. It shows an increasing Gothic influence, many Spanish words, over 1,600 being found in his works. The *Etymologiae* is without doubt a vast storehouse in which is gathered, systematized, and condensed all the learning current in Isidore's day, and the proof of its utility and popularity is that during the greater part of the Middle Ages it was the text-book most in use in educational establishments. The number of MS. copies of the work must have been enormous, and many remain. Even the Renaissance did not diminish its esteem, for ten editions were printed between 1470 and 1529. I can make no attempt to give an account of the authors whom Isidore laid under contribution for the whole work; 150 Christian and pagan have been identified.

This work was written at the request of Bishop Braulio not long before Isidore's death, and from their correspondence we learn that the entire work had not been received by him in 630. St. Ildephonsus says that Isidore was engaged upon it until his last day, and left it incomplete and uncorrected. The want of any opportunity to correct and to revise may explain the difficulty experienced in the interpretation of certain passages. Braulio, who edited the work, divided it into twenty books: (1) Grammar, including Metre based on Cassiodorus and Boetius; (2) Rhetoric and Dialectic, from Boetius' translation of Aristotle; (3) Arithmetic, Music, Geometry and Astronomy; (4) Medicine; (5) Law and Chronology; (6) Ecclesiastic Books and Offices; (7) God and the Heavenly and Earthly Hierarchies; (8) The Church

and the Sects; (9) Language, Peoples, Kingdoms and Official Titles; (10) Etymology based on the lost *Pratum* of Suetonius; (11) Man and his Parts (mostly from Lactantius "*De Opificio Dei*"); (12) Beasts and Birds; (13) The World and its Parts; (14) Physical Geography (13 and 14 based largely on Pliny and Solinus); (15) Public Buildings and Road Making; (16) Stones and Metals; (17) Agriculture, Plants; (18) Terminology of War and Jurisprudence, Public Games; (19) Ships, Houses, Clothes; (20) Diet, Domestic and Agricultural Tools, Furniture.

Books I to III are of interest to us because they are taken up with what, from the end of the fourth century, was known as the *Trivium* and *Quadrivium*, or the Seven Liberal Arts, and Isidore, who believed in a liberal education as essential to a physician, devotes Chapter XIII of his book on medicine to the demonstration that the Seven Liberal Arts are the necessary preliminary training of the doctor.¹ The *Trivium* comprised grammar, rhetoric and dialectic, i.e., the science of language, oratory and logic. It was known also as the *Artes Sermocinales* or language studies. The group was considered elementary and called *trivium*, a well beaten ground, like the junction of three roads. The *quadrivium* consisted of arithmetic, geometry (including geography), astronomy and music, or the mathematico-physical discipline: known also as the *Artes Reales vel Physicae*, and called *quadrivium*, or road with four branches. The term "liberal" as applied to the arts denoted the education of a Freeman (*liber* free), but by the time of Cassiodorus the derivation was drawn from *liber*, a book, and the "liberal" denoted book learning.

This system did not receive its full development until the Middle Ages but in the history of education it extends backwards and forwards, to the Greeks and Romans on the one hand, and beyond the Middle Ages on the other. It is beside our purpose to-day to trace its development and to show the influence which Pythagoras, Plato and St. Augustine had in the making of the system.

There were two books which undoubtedly had an influence on Isidore: (1) *The Satyricon* of Martianus Capella, written at Carthage at the beginning of the fifth century. Books I-III, *Nuptiae Philologiae et Mercurii* contain an allegory in which Phœbus presents the Seven Liberal Arts as maids to the bride Philology. In the

¹ Philosophy was ever considered as the culmination of these studies and "medicine, as they say, is the sister of philosophy" (Tertullian, "*De Anima*"). Galen had insisted in a special treatise "*Quod optimus medicus sit quoque philosophus*."

remaining seven books each of the Liberal Arts presents the sum of her teaching. (2) *De Artibus ac Disciplinis Liberalium Litterarum*, by Marcus Aurelius Cassiodorus, a little book of simple treatment on the Seven Liberal Arts intended for the use of clerics. Cassiodorus, the skilful minister of the Ostrogothic dynasty, when seventy years of age (c. A.D. 538), gave up public life and retired to his estate in the South of Italy. There he founded the Monastery of Vivarium (Viviers) and passed the remaining years of his life. His great object in founding the monastery was to elevate the standard of education among ecclesiastics, inducing them to study the models of classical antiquity and to extend their general knowledge by research. For this purpose he formed a library, spent large sums of money in the purchase of manuscripts, and established a scriptorium for their careful reproduction. To him we owe indirectly the preservation of many precious relics of ancient genius. We know nothing of the later history of this monastery, but its library, or a considerable portion of it, is believed to have found its way to Bobbio, and since the destruction of Bobbio some of the MSS. have been preserved at Verona.

I am convinced that Isidore wished to do for the Spanish clergy what Cassiodorus attempted to do for those in Italy. He certainly imitated the *De Artibus* in his *Etymologiae*, I-III, and that Book IV on medicine follows was probably due to the encouragement which Cassiodorus gave to his monks to study this science. In *De Institutione Divinarum Litterarum*, cap. 31, Cassiodorus explains to his monks that a knowledge of medicine is very necessary for those who have care of the sick and, as he commands that no monk is to accept any earthly reward for such labour, it is evident that their ministration to the sick extended beyond the walls of the monastery. For those who cannot read Greek, he recommends first the *Herbarium* of Dioscorides, in which the plants are shown (? dried) and their properties described: then the works of Hippocrates (probably the Aphorisms) and the *Therapeutica Galeni ad Philosophum Glauconem*; all of which, he says, we have translated into Latin. Also for their study is an anonymous author "who has collected his material from various authorities": possibly this may be Cassius Felix or the *Synopsis* of Oribasius. Then he recommends Aurelius Cœlius' *de Medicina* and Hippocrates' *De herbis et curis*, and "many other works on the art of healing which through God's help I have stored away in our library" (*in sinibus bibliothecae reconditos*). *Reconditos* suggests MSS. on special subjects stored away as not for general reading. An interesting question arises,

whether "Aurelius Coelius" is Aurelius Celsus or Coelius Aurelianus. The title of the work of Celsus is *De Medicina*, and no work of Aurelianus is known under that designation. At Vivarium therefore in the sixth century there was a fair collection of books on medicine by both Greek and Latin authors. Isidore had an extensive library of general literature and, as we shall see presently, one of the chests was reserved for works on medical subjects.

In presenting his information in encyclopædic form, Isidore was following a literary tradition which had its origin under the Empire. Roman culture in its decline sought to generalize rather than to specialize and hence arose the tendency to epitomize knowledge. In this way originated the works of Varro, Verrius Flaccus, the elder Pliny, and Suetonius. Varro and Verrius set themselves to reduce the mass of accumulated knowledge to order. Their compendia included grammar, word derivation, philology, antiquarian history, &c.

Varro (B.C. 116 A.D. 28) wrote *Antiquitatum Rerum Humanarum et Rerum Divinarum* in twenty-five and sixteen books respectively. Books II-IV were "on Man." The whole of the original work has been lost but much of the second section is contained in St. Augustine's *De Civitate Dei* and fragments of other parts are found in the works of later writers, many of them in those of Isidore. Varro also wrote *Disciplinarum*, lib. xi, a treatise on the Seven Liberal Arts, &c.; the eighth book on medicine. This work is said to have been lost before the time of Isidore.

Verrius Flaccus (latter half of first century A.D.) wrote *De Verborum Significatu*, a work of pure Latinity much quoted by later authors. The original has been lost, but not I think before the time of Isidore. Our present knowledge of the work is mainly through the epitomes of Pompeius Festus and Paulus Diaconus. Festus, whose date is uncertain (after Martial and before Macrobius) made an abridgement of Verrius, cutting out all archaic words and anything which he thought superfluous. He copied obvious clerical blunders and had apparently little scholarship. These epitomes, from the greater ease with which they could be reproduced, are probably responsible for the loss of the larger works. Paulus in the eighth century made a similar abridgement of Festus. Pliny the Elder (A.D. 23-79) and Suetonius (A.D. 75-160) were also compilers, but in their case natural science was brought into the foreground. Unfortunately it was merely extracts from numerous authors, reproduced and arranged without any critical judgment. Isidore was much indebted to both of these authors.

The Natural History of Pliny is extant and well known to you all: the principal work of Suetonius, an encyclopædia in at least ten books, is lost, only some fragments remaining. Isidore drew much of his information from the *Prata*, another lost work of Suetonius. It is said that the *Prata* inspired the general plan of the *Etymologiae* as well as many of its details.

At the beginning of the fourth century Nonius Marcellus of Thubursicum, in Numidia, compiled for the use of his son an encyclopædia in twenty books entitled *De Compendiosa Doctrina*. It is not a literary production and critics accuse Nonius of either ignorance or carelessness in the compilation. The value of the work lies in the fact that Nonius was of the conservative school and used no post-Augustan authorities, in consequence he has preserved many fragments of the early Latin literature, including numerous quotations from Verrius Flaccus.

It is beside my purpose to discuss the indebtedness of Isidore to each of these authors. In fact the question of the exact source is a complicated one, and classical students are not of one mind on the relation of these authors to one another, or of Isidore to them. For instance Isidore draws largely, one would say, from the Vergilian Commentary of Servius. In *Etymologiae* Book IV, on medicine, and Book XI, on man, I have collected thirty-three apparent references. Professor Nettleship, however, is of the opinion that Servius and Isidore were indebted to a common source, probably Verrius Flaccus. Other scholars think differently and it is not for me to decide between them. That the Servian Commentary was known to Isidore I do not doubt, considering the extraordinary position of eminence which Vergil held in the schools. The children in the Roman schools were taught by reading standard authors, the teacher providing a running commentary on the text. The scholars committed to memory a store of quotations from the early poets and historians, and it was largely owing to this influence that Vergil came to occupy and retain so large a place in the intellectual and moral life of the Romans. From the second century the *Æneid* was regarded as a great compendium of learning, a history of gods and men. In the Christian schools Vergil was the one pagan author never forbidden: with its full commentaries like that of Servius there was no more useful text-book and it kept its popularity through the Middle Ages. Dante, you may remember, much as he would have liked to have canonized Vergil, was unable for chronological reasons to make him a Christian and so had to place him in limbo: but if he

cannot place Vergil in Paradise, he does the next best thing, he converts Statius to Christianity by means of the Sybylline strains of the poet's "*Pollio*."

We will turn now to Isidore's presentment of science and commence with his view of the Kosmos. All his work is a mosaic of borrowings and as may readily happen in the case where the compiler has no special scientific knowledge, inconsistencies occasionally creep in.

The Constitution of Matter.—The origin of the visible universe had long perplexed the philosophers. As their knowledge was confined to the observation of the more obvious phenomena they were unable to do more than hazard conjectures respecting their probable causes. The result was a number of fanciful hypotheses sanctioned by the names of the leading Greek philosophers. Hence arose the eternal chaos of the Stoics, the shapeless mass of Aristotle, the self-existing atoms of Democritus, &c. In Isidore's day the Four Elements postulated by Empedocles (or rather by Athamas the Pythagorean) held sway. Plato had given them the name *στοχεῖα*, which Latin writers translated *elementa*. Isidore admits, as the primary constitution of matter, the four elements: of *fire* from which the heavenly bodies derive their light; of *air* destined for the support of animal existence; of *water* which surrounds and binds together the globe on which we live; and of *earth*, the heavy inert matter of which the globe is mainly composed. To the different combinations of these elements with the additional aid of the *Four Primary Qualities*, *heat*, *cold*, *moisture*, and *dryness* he attributed the various properties of bodies and the exhaustless fecundity of nature. These four elements were not simple but the visible manifestations of one underlying matter: this primary matter was a substance devoid of all qualities but susceptible of all forms and qualities. The elements were not mutually exclusive but all elements exist in all and therefore it was possible for one element to be transmuted into another ("all things are convertible into all things"—Aristotle) (see fig. 1). "For water is formed from earth and air from water: ether from air: and then inversely from ether air, from air water, and from water earth which is the lowest in the scale" (Cic., *De Nat. Deor.*, II, 33). The elementary qualities are not invariable but, as a rule, fire is hot and dry; air, hot and wet; water, wet and cold; earth, cold and dry. Each successive pair has a common quality and by means of this common quality one element can pass into another. In all this Isidore follows Plato and Aristotle through St. Ambrose and St. Augustine. The peripatetic theory of the fifth essence, "*Quintessence*," as distinct

from the four elements, finds no place here. St. Basil had noticed the theory not without scepticism, and the Fathers of the Church generally did not adopt it.

Isidore follows the usual arrangement of the cosmographical works of his time, based on Aristotle's four books "On Meteors" and four books "On the Heavens," but his spirit is quite different from similar Greek and Latin works. While he gives a summary of astronomy, meteorology and geography his principle is to cite all allusions to them in Scripture and in the writings of the Fathers, also in passages from the poets and pagan literature, but little or no consideration is given to their scientific elucidation. With Isidore, or with Ambrose from whom he quotes largely, science is only useful to them to explain the first chapter of Genesis.

In the Universe, according to Isidore, the elements arrange themselves in strata according to weight—fire uppermost and in succession, air, water, earth (fig. 2).

In the constitution of man the elements have their part. Man is explained by the universe. Man's body therefore contains the four elements. He has in him something of fire, air, water and earth. There is the quality of earth in the flesh, of moisture in the blood, of air in the breath, and of fire in the vital heat. This recalls Cicero in *De N. D.*, II, 18. "If anyone should ask the source from which we have the moisture and heat which are diffused throughout the body, the earthly firmness of the flesh and the air we breathe, it is clear that we have taken the one from the earth, another from liquid, another from fire, and another from the air which we inhale." So also as the elements in the universe are arranged in strata the human body must correspond. The head corresponds to the heavens, the eyes, as two luminaries, to the sun and moon. The chest corresponds to the atmosphere and the breath to the winds. The belly corresponds to the sea because all the humours are collected there, and the feet correspond to the earth because like it they are dry (fig. 3). The mind of man is placed in the citadel of his head, like God in the heavens, to rule and govern. In a passage in the *Differ.* II, 16, 17, fire has its seat in the liver, thence it flies to the head as to the heavens of the body. From this fire come the rays which flash from the eyes, and from the middle of this fire narrow passages lead not only to the eyes but also to the other senses.

Before leaving the elements let me remark in passing a tit-bit contained in the Greek original from which the *Pseudo-Clementine*

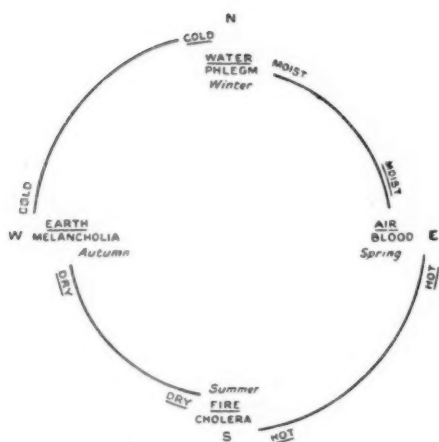


FIG. 1.

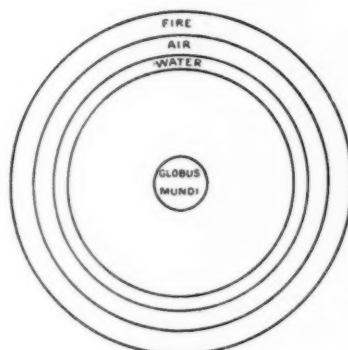


FIG. 2.

Fig. 1.—The four elements and humours with their qualities. Method of mutation.

Fig. 2.—The elements in strata by weight

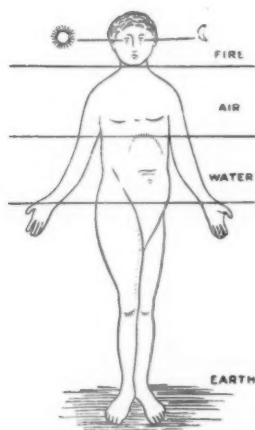


FIG. 3.



FIG. 4.

Fig 3.—The elements in man.

Fig. 4.—The world and its four quarters. The year and its four seasons.

Recognitions was derived (it is not in Isidore). Rufus who made the translation from the Greek tells us of several parts which he omitted, one was that the devil was the result of an accidental mixture of the elements.

Related to the four elements and the four elementary qualities were the *Four Humours*. Each humour had its corresponding element and shared the qualities of that element (*see* fig. 1). Blood like air, was hot and moist: phlegm, like water, cold and moist: yellow bile, like fire, hot and dry: and black bile like earth, cold and dry. In youth, blood abounds; in early manhood yellow bile; in middle age, black bile; and in old age, phlegm. The bodily constitution varied according to the proportion in which these qualities were mixed, and the particular constitution was accordingly called the "*mixture*" (*κρᾶσις*) or its Latin equivalent *temperamentum*, hence our word temperament. In the state of health there was a harmony between, or a *temperies* of the elementary contraries, hot, cold, moist and dry. Disease was due to an excess or a defect, *intemperies*, of one or more of these qualities so that Hippocrates described the art of medicine as "addition and subtraction; the addition of that which is deficient, and the withdrawal of what is in excess." Acute diseases were produced by an excess of the two hot humours, blood and yellow bile; chronic diseases by an excess of the cold humours, phlegm and black bile.

The Four Elements, Four Qualities and Four Humours formed the basis of Classical and Mediaeval Physiology and Pathology. They have been aptly described by Dr. Singer as "The Physical and Physiological Fours." We have often laughed at this "humoral theory" which held its own for so many centuries, but has it not struck you in the last year or two that the ancients are finding some justification for their humoral theory in the light of biochemical research, particularly in that part dealing with the internal secretions, and some justification for their belief in the transmutation of the elements in the light of research into the nature of radium?

I must notice very briefly some other points in Isidore's general view of the universe.

The phenomena of meteorology are explained largely by the elements. The upper air is akin to the fire above it and therefore calm and cloudless; the lower air akin to the water in its proximity and therefore cloudy, and disturbed (*Etymologiae*, XIII, 7, 1). The clouds are formed of condensed air which on further condensation is converted into water as rain (*Ibid.*, caps. 3 and 7). In the explanation



FIG. 5.

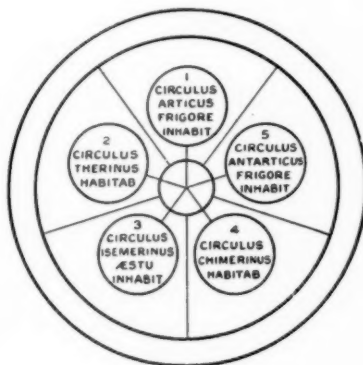


FIG. 6.

Fig. 5.—The elements of the world; the seasons of the year; the humours of the body. (From Isidore.)

Fig. 6.—The five zones of the earth. (From Isidore.)

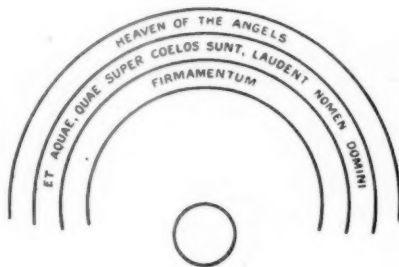


FIG. 7.

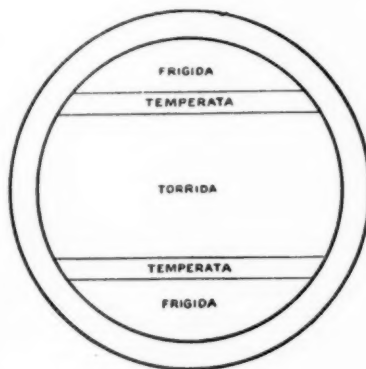


FIG. 8.

Fig. 7.—The three heavens of Isidore.

Fig. 8.—The five zones. (From Macrobius.)

of the seasons the qualities of the elements are used. Spring is composed of moisture and heat; summer of heat and dryness; autumn of dryness and cold; winter of cold and moisture (*De Nat. Rer.*, 7, 4; *Etymologiae*, V, 35, 1). To complete the cycle of "Fours" the four quarters of the compass are connected with the seasons and the elements (figs. 4 and 5), and the winds also have their separate relation to the four elements and through them to the four humours. Thus serving to explain the influence which the seasons, winds, &c., were thought to exercise upon the human body, a point made prominent in the aphorisms of Hippocrates and noted by Isidore (*Etymologiae*, IV, 4).

Isidore holds with Hyginus that the earth is spherical, but in his diagram (fig. 6) of the five zones into which the Greek philosophers divided the earth, he treats it as a flat surface. I place beside it for comparison a diagram from Macrobius.¹

The Heavens are plural (*De Nat. R.*, XII). *Coeli enarrant gloriam Dei*" sang David, therefore it must be so. Therefore in addition to the solid and mobile heaven known to pagan astronomers and called the firmament, there was above it a heaven of waters, according to the words of the Psalmist "*et aquae quae super coelos sunt, laudent nomen Domini.*" Above this again was a third heaven, the abode of spirits (*De Nat. R.*, cap. 13 and 14). This curious hypothesis was adopted by most of the early Christian cosmographers and had an important influence on mediaeval astronomy (fig. 7).

Like all of his time Isidore believed that the heaven is a sphere, rotating round an axis, having the earth in the centre (*Etymologiae*, XIII, 5; III, 31-32). Philolaus, a follower of Pythagoras (not Pythagoras himself as so often stated), had suggested that the centre of the universe was occupied by the sun, round which the heavenly bodies revolved. His conclusion was formed not from the observation of phenomena, but from the principles of a fantastic geometry, the the mysteries of the Pythagorean system of numbers requiring that the sun should be so placed (*see Arist. I*, p. 363; *Laert. I*, viii, 85). His opinion, however, was so repugnant to the daily illusion of the senses that his theory was rejected, and for centuries before Isidore the philosophers had taught that the earth is suspended in the centre and equally poised on all sides by the pressure of the revolving universe. They adopted the system of Ptolemaeus Claudius and from them it

¹ I think this is only a case of copying a diagram, for in *Etymologiae*, XIV, 5, 17, in speaking of Africa, Isidore refers again to the spherical shape of the earth.

was received by the Fathers of the Church and adjusted with a few modifications to Christian use. This Ptolemaean system held sway without opposition until scientifically disproved by Nichole Oresme, Bishop of Lisieux, mathematician and physicist, in his treatise *Traité du ciel et du monde* written in 1377. Oresme is one of the principal founders of modern science; in astronomy he forestalled Copernicus, as in the invention of analytical geometry he forestalled Descartes.

Isidore borrows from Ambrose (echo of Basil) the flux and reflux of the sun and its effect upon the moon (*De N. R.*, 16). He takes from Augustine, who had it from Pliny or Chalcidius, the hypothesis of the attraction exercised by the solar rays causing retrograde movement of Venus and Mercury (*Etymologiae* III, 66). From Ambrose he takes his view of the nature of the sun and the suggestion that it is replenished by water, supplied by exhalations from the ocean situated in the torrid zone (*Etymologiae* III, 49). Thales was originator of this theory which we find in Aristotle (*Meteor.* I, 3), Cicero (*D. N.D.* I, 10) and Basil (*Hexam.*). Isidore held that man is a microcosm or parallel on a small scale of the universe or macrocosm. Man contained the same four elements, distributed in much the same way, and all things are contained in man and in him exists the nature of all things. In short that man could be explained by the universe and the universe be explained by man.

We pass now to the fourth book of the *Etymologiae*, the *De Medicina*.

With regard to the text. Of printed editions there have been many, the best of the *Omnia Opera* is, I believe, that of Arevali, printed at Rome, 1797, annotated by Grial and Arevali: this has been reprinted in Migne's Latin Fathers, vols. LXXXI-LXXXIV. The best text of the *Etymologiae* is undoubtedly the recension of Professor W. M. Lindsay, Clarendon Press, 1911. Lindsay gives particulars of thirty-six MSS., containing all or part of the *Etymologiae*. Of these four are in England: Harleianus lat. 3034, lib. I-XX, eighth century; Harleianus lat. 2686 extracts lib. XV-XX, ninth century (both in the British Museum); Colleg. Reginae Oxonii 320 ninth century; Colleg. S. Trinit. Cantab. 368 ninth century, lib. V, 31-IX, 7, 28. There are also at Oxford portions of the *Etymologiae* in a twelfth century MS. at Oriel, a thirteenth century MS. at Balliol, and an eleventh century MS. at Trinity. I have not been able to examine any of these MSS., but hope to do so later—at least those which contain Books IV and XI.

From whom did Isidore obtain his medical information? In

tracing the sources of Isidore, as with other writers of his time and of those before him, the initial difficulty is that although all his information is borrowed, it is seldom that any acknowledgement is made of the indebtedness. In early days little heed was paid to such formalities, and the old authors, like the primitive Christians, seem to have had all things in common. In the whole of Book IV the only names mentioned are those of Varro, twice for the derivation of words, Ezechiel and St. Paul approving medicines, Vergil with quotations, Horace and Julius Cæsar in connexion with drugs, David and Asclepiades as exponents of the influence of melody on malady. Of these Asclepiades is the only one with any special knowledge of medicine. The library of Isidore was contained in fourteen *armaria* (presses) adorned with the portraits of twenty-two authors. From the elegiac verses which Isidore wrote to commemorate these authors, we learn that over the press containing the medical MSS. were the portraits of SS. Cosmas and Damian, Hippocrates and Galen. The SS. were patrons of the art of medicine, not authors, as far as we know, but the choice of Hippocrates and Galen show a critical discernment. Isidore unfortunately gives us no list of his medical books, but shall we be far wrong in thinking that, following Cassiodorus in many things, he had among others collected the works recommended by that Father to his monks. Dioscorides, Hippocrates, Galen, *Ad Glauconem*, all of which were to be had in Latin translations, Cælius Aurelianus or possibly Celsus. Who was the anonymous author possessed by Cassiodorus? Possibly the Compendium of Oribasius or that of Cassius Felix. Isidore certainly possessed a copy of Cassius, but I am doubtful about Oribasius, and think that Isidore's source of Galen was an epitome of that author corresponding to those found in the Middle Ages. There is one passage in *Etymologiae*, Book IV, which bears a striking identity with a passage in the *De Medicina* of Celsus. In Book XVII, 1, Isidore cites Cornelius Celsus by name as one of his authorities, *De rebus rusticis*, from which it would appear that he knew the lost *De re rustica* of Celsus; unfortunately the whole list of authorities has been borrowed from Columella, and Columella's own name added to the list.

It has been often stated that Isidore was indebted to Cælius Aurelianus *De morbis acutis et de morbis tardis* for nearly all of his book on medicine. This is too wide an estimate. As far as medical authors are concerned Book IV has been compiled from the works of two opposite schools: the Methodist, represented by Aurelianus, who

supplies the material for nearly all Chapter VI on acute diseases, and Chapter VII on chronic diseases; the second the Logical (or Rational or Dogmatic) school, represented by Hippocrates, Galen and Cassius Felix, supply material for most of the other chapters. The chapter on drugs is from Scribonius Largus, Pliny, Theophrastus and Dioscorides. With the exception of one or two passages, the sources of which I have not yet identified, the following is a list of authorities used by Isidore in Book IV *de Medicina*.

<i>Fathers of the Church.</i>	<i>Physicians.</i>	<i>Prose Writers.</i>	<i>Poets.</i>
Lactantius.	Hippocrates, fifth century B.C.	Cicero.	Lucretius.
St. Ambrose.	Galen, second century A.D.	Seneca.	Vergil.
St. Augustine.	Scribonius Largus, first century A.D.	Plato.	Servian Commentary.
Tertullian.	Soranus, second century A.D.	Aristotle.	Ovid.
Cassiodorus.	Serenus Sammonicus, third century, A.D.	Varro, Verrius, &c.	Horace.
Papias.	Theodorus Priscianus (?), fourth century A.D.	Lucilius.	
Pseudo-Clementine Recognitions.	Cassius Felix, fifth century A.D.	Aulus Gellius.	
	Cælius Aurelianus, fifth century A.D.		
	Theophrastus.		
	Dioscorides.		

Of the medical authors, there is no need to make any comment on Hippocrates and Galen, and, with the exception of Aurelianus and Cassius, the remainder have but a small share in the book. Of Cælius Aurelianus one must say a few words. There is no definite knowledge regarding the date at which he flourished, but by a process of deduction it is believed that he lived in the fifth century A.D. Nothing is known of his life, but from the description *Siccensis* applied to him in manuscripts he is thought to have been a native of Sicca Veneria, in Numidia. His only work which has survived is the *De morbis acutis et de morbis tardis*, a fragment of his work on diseases of women, and probably a fragment of his book on fevers. From the preface to his book on acute disease we learn that he had written a work on surgery (*Χειρουργούμενα*), *Responsionum libri* (a general work on medicine), *Muliebrium passionum*, *Græcorum epistolarum ad Præxtatum*, *Adjutoriorum sive Medicaminum*. It is also known that he wrote a book on fevers, and one on the preservation of health. Some of his works were in Greek, for he says that he dedicated the *Responsionum libri* to Lucretius, who was an adept in that language, and that he wrote *De acutis morbis* in Latin for the use of his pupil Bellicus, who knew not Greek. His Latin is barbarous, as judged by classical

standards, and his Greek not much better. One does not expect purity of style or diction from a Punic author, but Aurelianus certainly makes hard reading. The subject matter of his book on acute and chronic disease is full of valuable information. It is usually stated that this book is a work of Soranus, which Aurelianus translated into Latin. This may be correct, but I have doubts about it; the impression which a perusal of the preface and certain remarks in the text have left upon my mind, is that the book is an abbreviated edition in Latin of his *Responsionum libri*. Aurelianus was a devoted disciple of Soranus, and loves to quote him as his authority: it is certain also that the book is essentially the teaching of Soranus, but I should hesitate to accept the view that it is a mere translation. Aurelianus does not hesitate to criticize his beloved master when he thinks it necessary.

Aurelianus was a zealous member of the Methodici, and it is principally from his work that we are able to obtain a correct view of the principles and practices of this medical sect. The book on "Acute and Chronic Diseases" is a compendium of medicine, uniform in design, the arrangement being much more like our present system of describing disease than is found in any other medical author of antiquity known to us. Aurelianus commences with the definition of the disease, its Greek and Latin names: then the technicalities of the disease are clearly and shortly described, the material being arranged upon the usual plan of the time *caput ad calcem*. He gives the ætiology, symptomatology, pathology (frequently with anatomical additions), diagnosis and treatment. One great feature is that Aurelianus makes use of all preceding medical literature from Hippocrates to Soranus: he mentions eighty-nine physicians and authorities: the opinions of some are quoted frequently, Hippocrates twenty-four times, Asclepiades forty-seven, Themison thirty-nine, &c. Despite the want of style the symptoms of disease are depicted in living colours: differential diagnosis is developed with an accuracy not found before him and physical examination is not neglected. To give an example of his method take the first disease mentioned, *Phrenitis*: (1) Definition; (2) Different views on causation; (3) Prodromata; (4) Symptoms; (5) Differential Diagnosis from furor, melancholia, pleuritis, peripneumonia, and certain poisons. (6) Treatment: (a) Soranus-Methodist; (b) Diocles and Erasistratus-Dogmatic; (c) Asclepiades; (d) Themison-Methodist; (e) Heraclides-Empiric.

It was probably on account of the clear description of disease and the fullness and simplicity of the directions for treatment that

Cassidorus recommended the work of Aurelianus to his monks and Isidore made use of it. The book was popular in the early years of the middle ages and found among the Salernitan collections.

As it is impossible to consider in detail the description of diseases in Isidore's book, let me put before you a short general statement of the Methodist standpoint in regard to medicine. Asclepiades adopted the doctrine of Atomism and applied it to medicine. He conceived the human body as built of pores (ὄγκοι) on the movement of which life depended. Combinations of these atoms formed innumerable tubular spaces—the pores of the body—endowed with sensation. In the tubular spaces atoms of different sizes were in constant movement, and along them flowed the stream of body juices. All the physiological processes were considered as purely mechanical. Health was dependent on the proper proportion of atoms (συμμετρία) to pores, so that free movement could take place. Disease was primarily referred to a disturbed movement of the atoms (ἐνστάσις, στάσις). Themison, the successor of Asclepiades, held that by a comparison of one disease with another certain common characteristics were evident. That all diseases, acute or chronic, could be classified into genera, and these again into two fundamental varieties (κοινότητες, communicates)—viz., the condition of tension (στέγνωσις, status strictus), or the condition of relaxation (ρύσις, status laxus), both dependent on the condition of the pores. A further step was to classify all acute diseases as due to a status strictus and chronic to a status laxus. This simplified, at least in theory, the question of treatment which was to consist in counteracting the constriction or relaxation of the pores by therapeutical measures acting upon the whole body. From the adoption of this cut and dried theory his followers were called *Methodici*. According to them "*medicina est methodus inveniendi morborum κοινότητας quae simulper se sit evidens.*" The later disciples, like Aurelianus, though adopting the theory in general, were much more rational in their practice. Aurelianus treats the body as a whole, but his attention is also directed to the part affected. Holding a pathology of "solidism," the Methodists paid little consideration to the humours or the pnuma.

Their line of treatment was that of safety, using general remedies and never resorting to heroic measures. All specifics were rejected and Aurelianus poked fun at those who used them. The treatment for the first three days was expectant—fasting, massage, warmth and friction. Much care was bestowed on the environment of the patient, the ventilation and lighting of the sick room, the patient's position in

bed and his diet. During the second triduum, unless the disease was very acute, the treatment might include venesection or wet cupping, sometimes leeches, sometimes dry cupping. Among the general remedies for solution of tension were hot air, soft clothing, rinsing out the mouth with hot water or sweet oil, fasting, unctions, warm baths, poultices, venesection, wet cupping, gestatio, mild clysters or emetics.

Those for a relaxed condition were, astringent and tonic measures, cold affusions, poultices and baths; mouth rinsed out with cold water and vinegar; body sponged with *posca* (vinegar and water); wine; local application of alum to the skin; sleep, rest, narcotics, &c. Purgatives were seldom used except in hydrops. Diuretics and sudorifics only in a few cases. Convalescence, "*curatio recorporativa*," was very fully considered. Cure was divided into five stages: (1) *Primo*—mild astringents; (2) *In augmento*—soothing and relaxing; (3) *In statu*—soothing and relaxing; (4) *In declinatione*—emollient; (5) *In recorporativa*—fortifying and building up.

The text of Aurelianus is, I feel certain, very corrupt. Unfortunately the MS. from which the first edition of his "Chronic Diseases" was printed in 1529, and that from which the "Acute" was printed in 1533 have been lost. In 1567 the two works were printed in one volume and another edition appeared in 1569. Amman's edition of 1708 is the best and has been many times reprinted; the ninth edition, the one I have had in use, is dated 1755.

Daremborg, in the preface to the first volume of his "*Oribasius*," says that in the "*Collectio Salernitana*" of Renzi (Naples, 1857) is a work of Gariopontus the Salernitan writer of the eleventh century, and that this work includes two treatises, both very ancient, the one attributed to *Æsculapius* and the other to Aurelius. In 1847 Daremborg had published a MS. preserved at Brussels entitled "*Aurelius De Morbis acutis*" which on examination was found to be an epitome of the *De morbis acutis* of Aurelianus, and some observations on fever (possibly part of the lost work of Aurelianus). *Æsculapius* is found to have a great analogy with Aurelianus, and Daremborg was of opinion that from a collation of these MSS. it would be possible to correct the text of his *De morbis acutis*. Daremborg hoped to give us this amended text, but even if he had time to complete it I do not think that it has been published.

The work of Cassius Felix is a compendium, an epitome of the theoretical and practical teaching of the dogmatic school. Written in

A.D. 447 it has for title *De medicina ex graecis logicae sectae auctoribus liber translatus sub Artabure et Calepio consulibus*. From the uncouth Latin and the Punic expressions it is concluded that Cassius hailed from North Africa. The works of Galen, especially *Ad Glauconem*, and the pseudo-Galenic *Euphoriston* are mostly drawn upon. Nothing is known of Cassius. His work was first printed by Valentine Rose in 1879, the text being a collation of three MSS., St. Gall 105, eleventh century; Cambridge G. g. 32 chart, fifteenth century, and Paris, lat. 6114, thirteenth century. Cassius, as well as Aurelianus, was known to the Salernitan compilers of ancient medical authors. The "Medical Lexicon" of Simon Januensis (c. A.D. 1300) has some 200 entries under his name, and the preface of this dictionary speaks of the frequent use of his two works *De practica*. From that time until our own day Cassius appears to have been unknown. Simon says that Cassius borrowed much from Cornelio (Celsus) but I do not think this statement is correct.

To these two writers, Aurelianus and Cassius, Isidore was most indebted,—Aurelianus the mouthpiece of Soranus, and Cassius the mouthpiece of Galen. "Thus it came to pass that at the close of this period of antiquity, Soranus the *medicorum princeps* and Galen the physician of Pergamos found expression through the medium of Latin translations" (Neuburger) and were united by the hands of Isidore.

Isidore's book on medicine is divided into thirteen chapters:—

Chapter I tells us that medicine is that which preserves or restores the health of the body. To it belong, beside the usual medical subjects, the questions of food, drink and clothing, and everything which protects the body.

Chapter II: Medicine is derived from *modus*, i.e., moderation. Nature is injured by any excess. This is the doctrine of the old Greek philosophy, the application in the physical order of the "Be moderate" of the Seven Sages. To the Greek moderation was the virtue *par excellence*. Hippocrates, or the "Timaeus" of Plato may be the source of this chapter.

Chapter III: The Founders of Medicine. Its discovery by Apollo, its development by Æsculapius his son; the death of Æsculapius and the eclipse of Medicine until the advent of Hippocrates. Isidore's sources are Pliny, Plato's Republic, and Soranus.

Chapter IV: The Three Medical Sects. The Methodica, founded by Apollo, depends on remedies and incantations and takes note of nothing but the disease. The Empirica, founded by Æsculapius, depends upon

experiment and not on the interpretation of symptoms. The Logica or Rationalis, founded by Hippocrates, takes into consideration the age, diseases, locality, climate, &c. I cannot find the source of this chapter, it is not from Galen *De sectis*, nor from Celsus who has written the best critical examination of the pretensions of the three sects. Themison, and not Apollo, was the founder of the Methodists. The Empirics and not the Methodists used charms and incantations, the works of the latter being as free from superstitious practices as those of the former are full of them. If *carmina* may stand for musical therapeutics the source was probably Methodist, and the reference to Apollo an impudent claim to seniority.

Chapter V: The Four Humours. *Sanitas* is derived from *sanguinis status* because the state of health depends on the proper composition of heat and moisture, i.e., blood. *Morbus* is derived from *mors* because disease has something of death in it. Then follows the enumeration of the four humours and their corresponding elements. Cholera (yellow bile), so-called "because it is terminated in the space of a day"; this from Æsclepiades. Melancholia is the admixture of bile with the dregs of black blood, i.e., the black residue of the hepatic digestion strained off and carried to the spleen. Galen, who is followed in these early chapters, held that a concoction took place in the liver and that from the crude blood of the *venæ portæ* was separated the yellow bile, which passed to the gall bladder, then to the duodenum, and a heavy impurity, the black bile, which passed to the spleen. Phlegm also was a waste product from the blood, cold in nature, and served to temper the heat of the choler and of the blood. Health depends on the mixture in proper proportions of the qualities of the humours. In this chapter Isidore's source is Galen's *Med. Defin.* Following the same author, acute disease is due to blood and yellow bile, chronic disease to phlegm and black bile.

Chapter VI: On Acute Diseases.—The entry under each disease is quite short, merely a derivation of its name to show what it is. The whole of the book in fact is merely a syllabus of diseases which Isidore intended his students to investigate in detail in the medical MSS. in the library. Perhaps intended as a syllabus for lectures. Phrenesis, Cardiaca, Lethargia, Synanche, Pleuresis, Peripneumonia, Apoplexy, Spasmus, Tetanus, Ileos, Hydrophobia, Phlegmone Stomachi, are mainly or wholly from Aurelianus. Telum from Serenus Sammonicus; Carbunculus from Cassius; Febris from Varro. Pestis and Inguinaria from Lucretius and the Clementine Recognitions.

Chapter VII: On Chronic Diseases.—Cephalea, Epilepsia, Vertigo, Mania, Melancholia, Catarrhus, Coryza, Branchos, Raucedo, Hæmoptois, Phthisis, Empye, Hepaticus morbus, Lienosis, Hydrops, Nephritis, Paralysis, Cachexia, Atrophia, Sarcia, Podagra, Arthritis, Calculus, Stranguria, Dysenteria, Colica, Hæmorroides, are from Aurelianus. Tussis, Lienteria, Apostema, Ischias from Cassius. Part of Epilepsia from Sammonicus and Apuleius. Mania from Cicero or Plato. Rhagades possibly from Celsus. A humoral explanation is attached to Vertigo. The arteries and the veins produce in the head a windiness from the resolving of moisture and make a whirling in the eyes. This would be a transmutation of the element of water into that of air, whether from the phlegm in the ventricle or from the water of the "almost fluid" brain (Aristotle and Galen) is not said. An interesting statement concerning cerebral localization is attached to melancholia. Epilepsy arises in phantasy, melancholia in reason and mania in memory. Isidore was acquainted with the three ventricles of the brain through St. Augustine (*see Differ.*, II, 51). It was Poseidonios, of the fourth century, who located imagination in the anterior ventricle of the brain, reason in the middle and memory in the posterior ventricles. Paralysis is said to be due to great cooling of the body. Satyriasis and diarrhoea which Aurelianus includes among the acute diseases, Isidore places among the chronic.

Chapter VIII: Diseases of the Surface of the Body.—From Aurelianus none except part of Icteris and possibly Elephantiasis. From Cassius Felix—Alopecia, Parotides, Erysipelas, Serpedo, Impetigo, Prurigo (?), Scabies, Lepra and Frenusculi. Part of Icteris from Pliny and Varro. Cancer from St. Augustine. Lentigo, Oscedo and Furunculus from Sammonicus. Papula and Sanies from Servius Vergil. Nyctalmus and Cicatrix from Pliny (and Theodorus Priscianus). Of Syringio (Fistula) we have only the name. Ordeolus, Ulcus, Vulnus, Pustula I have not yet traced, but expect they may be from an Epitome of Galen.

Chapter IX: Benefit of Drugs from Tertullian. Division of remedial measures into Pharmacia, Chirurgia, Diaeta—great verbal resemblance to preface of Celsus lib. I. Use of herbs as the start of medicine from St. Ambrose. "Ex contrariis" and "ex similibus." Antidotes from Galen or possibly Hippocrates. Drugs with special names derived from their properties. Hieria, Arteriaca, Theriaca, Cathartica, Catapotia, Diamoron, Diacodion, Diaspermaton, Electaria, Trochisci, Collyria, Epithemata, Emplastra, Catasplasmata, Malagmata, Enemata,

Pessaria. From Pliny, Scribonius Largus, Cassius and Galen. Critical days from Galen or Cassius. Chiron from Pliny and Servius Vergil.

Chapter X: Medical Books.—Aphorisms, Prognostica, Dynamidia, Botanicum Herbarium. From Galen, Hippocrates, Servius Vergil and Cassiodorus.

Chapter XI: Surgical Instruments.—Enchiridion, Bleeding lancet, Scalpel, Sharp hook, Probe and Spatula, Cupping instruments, Clyster, Pestle and Mortar, Coticula. From St. Augustine, Aurelianus, Cassius, Theodorus Priscianus, Varro, Servius, Nonius Marcellus.

Chapter XII: Perfumes and Ointments.—Thymiana, Incensum, Stacte, Myrobalanum. Simple ointments, Telinum, Amaracinum, Rosaceum, Cyprinum and Anethinum. Compound ointments, Cerotum Chalasticum, Martiatum. From Pliny, Columella, Theophrastus, Dioscorides, Servius Vergil.

Chapter XIII: On the Preliminary Education of the Physician.—From Galen, Hippocrates, St. Augustine, Cassiodorus, Aristotle. Isidore says that some persons ask why medicine is not included among the Liberal Arts. The reason is because each art deals with its own particular subject but medicine embraces all of them. For the physician must know Grammar that he may be able to understand and explain what he reads; Rhetoric that he may be able to discuss his subject; Dialectic (Logic) that he may rationally investigate the cause and cure of disease; Arithmetic that he may be able to reckon the intervals of periodic fevers; Music for its curative value; Astronomy that he may be able to calculate the course of the stars and the change of seasons. That is to say that the physician must have a knowledge of the Seven Liberal Arts. Hence Medicine is called *Philosophia Secunda* for philosophy and medicine both lay claim to man. By the one the mind, by the other the body is cured. So said Aristotle.

I should like in conclusion to thank Dr. Singer for the help he has given me in this study. Without his advice and suggestions it would have been impossible for a beginner like myself to have attempted it.

Postscript.—Since this paper was written I have had the opportunity of reading *De l'école de Salerne in La Médecine, Histoire et Doctrines* by C. Daremberg. The author notes the strange mixture of the teaching of the two opposite schools, Methodist and Galenic, in the Salernitan MSS. prior to A.D. 1050. In Isidore, as I have shown, we find the same curious feature some 400 years earlier. Daremberg says that the early Salernitan MSS. present more of Methodism in their details than in the general propositions. We find the same holds good for the fourth book of the *Etymologiae*.

SOME OF THE BOOKS CONSULTED.

- AREVALI. "Isidori Omnia Opera," edit. in Migne, lxxxi-lxxxiv.
- LINDSAY, W. M. "Isidori Etymologiarum," lib. xx, Clarendon Press, 1911.
- "Liber Quartus Etymol.," &c., Commentario Simphoriani (1509).
- BREHAUT, E., Ph.D. "An Encyclopædist of the Dark Ages: St. Isidore."
- D'AULT-DUMESNIL, E. "Etude sur la vie, les œuvres, et les temps de St. Isidore de Seville,"
L'Université Catholique, xvi.
- SANDYS, J. E. "A History of Classical Scholarship," 1906.
- NETTLESHIP, HENRY. "Lectures and Essays," 1885.
- GRAVES, PROFESSOR. "History of Education before the Middle Ages," 1911.
- LAURIE, PROFESSOR S. S. "Lectures in History of Education, A.D. 200-1350," 1886.
- DUHEM, PIERRE. "Le Système du Monde," 1915.
- DREYER, J. L. E. "Planetary Systems," 1906.
- CÆLIUS AURELIANUS. "De Morbis Acutis" and "De Morbis Tardis," Amsterdam, 1755.
- The works of VERRIUS FLACCUS, FESTUS, PAULUS, NONIUS, in the Teubener series.
- The usual texts of the old medical writers.
- NEUBURGER. History of Medicine.
- WITHINGTON. Medical History.

Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

Survey of Medical Manuscripts in the British Isles dating from before the Sixteenth Century.¹

DOROTHEA WALEY SINGER.

THE medical MSS. form the largest group in the Catalogue of MSS. of Scientific Material in the British Isles dating from before the sixteenth century, on which I have been working for some years.

The formulation of this work has not been the result of an abstract theory that it might prove a useful instrument of research. In attempting to trace the rise and development of scientific thought Dr. Singer and I were soon confronted by the paucity of available mediaeval material.

From the ancient classical period we have abundant survival, printed and thoroughly edited. We really can picture to ourselves something of the outlook and practice of the great minds of science and of medicine—both in Greece and throughout the Roman Empire, where ideas on such subjects were carried from Greece. Again from the early beginnings of modern interest in the material world, say from the time of Fracastor, or from Vesalius onwards, we have a mass of printed books, through which we can trace the evolution of medical theory and practice right up to our own times. Even for a generation before these pioneers we can study in a series of incunabula and early printed books the last stages of mediaeval medicine beginning to crumble under the influence of Renaissance ideas. But for the period intervening from the fall of Greek science to the rise of the more modern work, roughly for the 1,000 years from 500 A.D. to 1500, printed material is extra-

¹ At a meeting of the Section, held February 19, 1919.

ordinarily scarce. The ideas of our mediaeval forefathers on science and on medicine are at present largely hidden from us.

They are not, however, irretrievably lost. All that is needed is an enthusiasm and an expenditure of time and labour on our part comparable to the merest fraction of that displayed by the scholars of the Renaissance who rescued the thought of antiquity for us. I would plead seriously for the extreme interest and value to the human race of the sense of continuity. Perhaps every generation has to relearn in a new aspect the great lesson of the solidarity of the human race in time and in space. Certainly in many respects that fact was apprehended far more vividly and practically by our mediaeval ancestors than by ourselves. Perhaps in spite of knowing less astronomy, they were more conscious than ourselves of citizenship of the whole universe rather than merely of this earthly sphere, still less of a single political state. But whatever be the disintegrating forces that have led to the exaggerated modern sense of race—usually as our anthropological friends assure us, based on sad misinformation as to fact—it will not be denied that the study of the growth of thought in the long line of our human ancestors stimulates us to a wider outlook. It is not necessary, however, to plead before this Section the claims of historical study. In surveying the foreigner of another age we are all less anxious than in the presence of a contemporary stranger. We are not startled by the dusky complexion of St. Augustine. We do not consider the nationality of Dante. Similarly it is not difficult to gain enjoyment and even inspiration from mediaeval writers without committing ourselves by any means to their general outlook.

It may be objected that mediaeval science is worthless. The answer to this criticism is really complete and brief. All science is superseded and cast aside as soon as it becomes old enough, but in order to produce a history of scientific thought, and especially in order to understand those beginnings of modern science that are not yet quite old enough to be regarded as pure rubbish, it is absolutely necessary to give a clear and accurate picture of the derelict systems out of which our scientific thought has grown. We cannot fully understand an idea until we know its history, and to gain a complete understanding of what science is we must have an adequate account of how it arose. No such account exists, and it is the rough material for such a work that we have endeavoured to collect. The first need has been a classified list of the MSS., and this we now have in working order. It has been compiled mainly from published catalogues of MSS., but where

these have been found very meagre, the MSS. themselves have been handled and dated, a work in which we have received much kind help, especially from Mr. J. P. Gilson of the British Museum, Mr. Robert R. Steele, who has specially helped us over Bacon, and Miss M. V. Taylor.

In compiling our hand-list we have had the great encouragement of grants from both the Royal Society and the British Academy. The help from these two bodies symbolizes that co-operation of scientific method with humanism and scholarship that has, I think, characterized medicine, and that we hope will be fostered by the growing study of the history of science and of medicine.

But this hand-list is of course merely a tool, or rather a finger-post. Already we have begun the examination of manuscripts to convert our bald list into a catalogue raisonné. But a great deal remains to be done. Just as the Renaissance writers eagerly transcribed and printed the classical MSS. as they were successively rediscovered, so I would plead for volunteers who will transcribe and edit our mediaeval medical MSS. In one important respect our task is far easier than that which confronted the Renaissance enthusiasts. It is no longer necessary to examine the MSS. themselves in the libraries where they repose. The modern method of rotography, the fixing of negative photographs, enables us to obtain at a cost of but a few pence per page copies of the MSS., which except for colour are exact facsimiles of the originals. Thus we can study these documents at leisure in our own homes, and I would appeal for volunteers for this work, and would even venture to suggest that it may command from future generations of our countrymen no less gratitude than other more immediately tangible forms of national service.

We can provide for the most various and the most specific taste in research. We have purposely provided our catalogue with detailed indices enabling us to turn up at once material for those who are interested in any scientific or medical subject, using the terms in their widest sense, in any language, in any period, in any man or woman—for we must not forget Dame Trot of Salerno. The scholar who will generously give his time or even a little of his time to a careful examination of the MSS. in any one subject and will write a monograph upon them, will be laying the foundation for the catalogue raisonné which we hope ultimately to produce with the help of many co-editors; and this catalogue raisonné comprising many careful monographs will we hope, in its turn, form the basis of the mediaeval

section of a complete history of science somewhat on the lines of such a work as the Cambridge Modern History.

The following are the headings of our catalogue :—

HEADINGS OF THE CATALOGUE.

ALCHEMY and Chemistry.	LAPIDARIES.
ANATOMY.	MARVELS.
ARISTOTLE.	MATHEMATICS.
ARTS and Crafts.	MEASURES AND WEIGHTS.
ASTROLOGY and Menology.	MEDICINE (General).
ASTRONOMY.	MELOTHESIA.
BESTIARIES, Monstrosities and Fables.	MUSIC (Harmony, Scientific aspects).
CALENDAR.	OPHTHALMOLOGY.
COMPUTUS.	PESTILENCE, Contagion, Epidemic, Plague and Infection.
CHARMS and Magic.	PHLEBOTOMY.
CHILDREN.	PHYSICS.
COSMOLOGY (De Rerum Natura, De Elementis, &c.).	PHYSIOGNOMY and Cheiromancy.
DIET.	PHYSIOLOGY (Four Complexions, &c.).
FERMENTATION and Generation.	PROGNOSTICS.
FEVERS.	PULSES.
GEOGRAPHY and Travel.	RECIPES (Medical) and Drugs.
GNOMIC.	REGIMEN.
GYNÆCOLOGY.	SCIENCE, General, and Encyclopædias.
HEMATOSCOPY.	SURGERY.
HERBARIA.	URINE.
HOSPITALS.	VETERINARY.
HUSBANDRY.	

Throughout our Catalogue we are confronted by the difficulty of classification. What is Science? What is Medicine? My point is, not that there is no answer to these questions, but that the mediaeval answer was not that of to-day. Last week, for example, I was handling in our History of Science Room at the Bodleian a fifteenth century general handbook of medicine,¹ in which several times a herbal salve is followed by the description of a cure by incantation. To the writer there was no important dividing line between the two therapeutic methods. But soon after the work was written we find that an annotator went through the volume, marking valuable recipes in red but sternly crossing through all the charms!

Since the fringes of our subject are often entertaining and even illuminating, I hope you will forgive my adopting the mediaeval rather—shall I say broad view of the curative art in considering these survivals from the writings of that age.

So I shall ask you to allow me to include not only recipes but also charms and magic in our survey. I propose to give first a very few

¹ Bodley Add., A 106.

statistics which will indicate the broad outline of the subject, and then to illustrate the various categories by pictures and quotations from the MSS. themselves.

Our Catalogue contains some 30,000 manuscripts of which some 15,000 fall in the medical or quasi-medical categories. The 15,000 MSS. cover, of course, but a few thousand texts, as there will be many duplicates. The figures of texts which follow are tentative, as the final allocation of the MSS. into separate texts is only possible after they have all been examined. Especially many of the apparently distinct anonymous texts will probably be found to have a common basis and these anonymous texts are a large proportion of the whole. Their examination and allocation form in fact the main part of just that complex task in which I have ventured to plead for your co-operation.¹ And the fruit of this work will probably, in this as in other lines of science, lead to a simplification of the whole problem.

There survive in this country some

1,900 texts on general medicine within our date. Many of these are of course wholly or partly copied from one another with accretions and variations from hand to hand.

We find 225 passages or treatises on anatomy.

194 surgical texts.

42 on the pulse.

274 on diagnosis by urine.

63 dealing with the eye (often merely recipes).

10 on diagnosis by blood inspection.

600 on herbals and simples, classified according to the herbs.

2,500 recipe entries, some collections and some single, apart from those in the general works and some curious recipes in the bestiaries.

669 bestiaries.

600 magical texts and charms apart from those scattered in general works.

953 works on alchemy and alchemical medicine.

183 lapidaries.

114 works on physiognomy and cheiromancy.

41 melothesia.

¹ Since this paper was read in February, 1919, considerable additions have been made to the Catalogue. These, however, will not materially alter the *proportions* shown in the following diagrams.

- 624 texts on the four complexions.
 234 on phlebotomy, in many of which astrology, menology and the unlucky days play a main part.
 168 on fevers, in a number of which the conception of complexions is predominant.
 144 on diet.
 90 on pestilence, in many of which astrology is reckoned as an important factor.
 176 on gynæcology.
 106 on fermentation and generation.
 72 devoted to the regimen and health of children.
 214 other regimens, and perhaps I should mention
 220 texts, chiefly charters, throwing light on the early history of hospitals,
 and 144 veterinary.

The great mass of the MSS. were written between the years 1200 and 1500, especially in the fourteenth and fifteenth centuries.

A very few of the most ancient works, such as Greek papyri, are included in our work. Practically, however, we have little before the eighth century. The distribution in time of our surviving medical material is roughly shown in the following tables :—

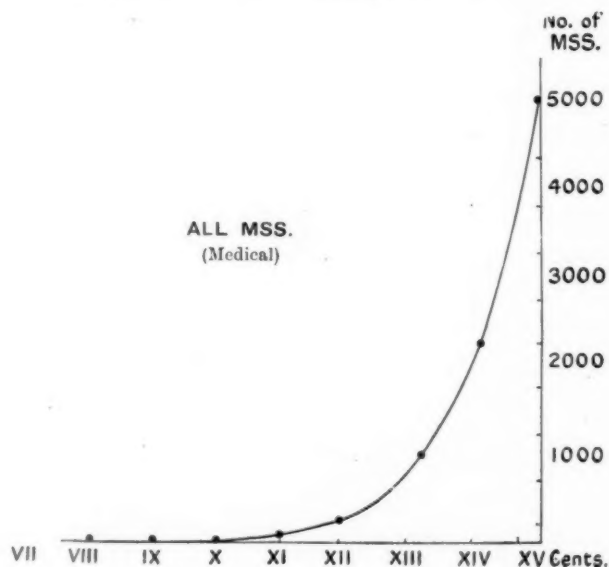


FIG. 1.

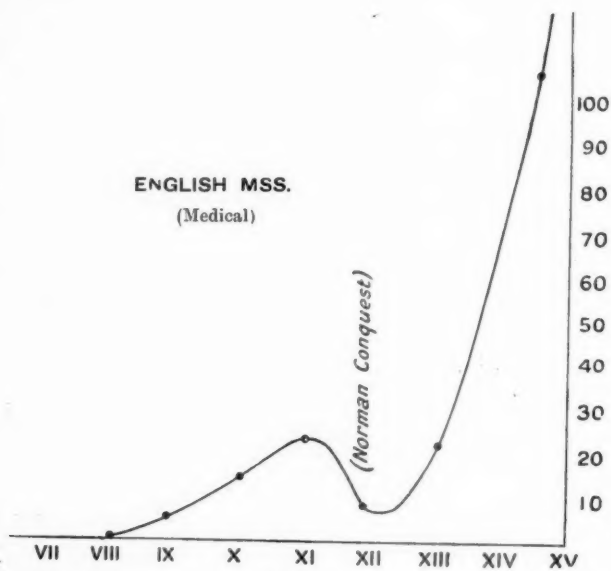


FIG. 2.

Nº OF MEDICAL MSS.
IN WESTERN LANGUAGES.

	<i>Latin</i>	<i>English</i>	<i>Greek</i>	<i>Others</i>	<i>Totals</i>
VIII	5	1			6
IX	17	2			19
X	23	12	2	1	38
XI	73	20	5	0	98
XII	158	6	4	7	175
XIII	974	20	5	59	1058
XIV	1948	140	40	123	2251
XV	3729	872	144	186	4931

FIG. 3.

We will now turn to a few slides illustrating the MSS. in our Catalogue. I beg you to regard the slides as something in the nature of bait. Of course, I have had to choose them almost at random from some 15,000 MSS., so if any one feels that some other sort of MS. might interest him more than these here shown, I hope he will still give us a chance of providing him with material that may interest him. If anybody will undertake a whole section of the Catalogue we shall be delighted, or if any one cares to transcribe or translate only one manuscript of a few pages we shall no less welcome his help.

(1) British Museum. Royal 2 B V folio 189 recto. Ninth century. Anglo-Saxon work. Page of general information as to the Ages of Man (the Hippocratic division as continued by Galen), the size of the world and the following brief anatomy: "De ossibus, uenis et dentibus. In perfecta etate, ossa hominis sunt numero CCXVIII. Numerus uenarum CCCLXV, dentium numerus in perfecta etate XXXII." These few sentences constantly recur in MSS. of all periods. Something very like them is to be found in the Talmud, and they occur, for example, in a fourteenth century MS. at Jesus College, Cambridge; and in a fifteenth century MS. at Trinity College, Cambridge. No doubt examples could also be cited for the intervening centuries.

(2) Bodleian Library. Bodley 579, folios 50 verso, 51 recto. Tenth century. Anglo-Saxon work. (Published by E. F. Warren, "Leofric Missal," Oxford, 1883.) Sphere of Apuleius Platonius (here compressed into a rectangle) from the Leofric Missal. The name of Apuleius Platonius is associated with a herbal that was translated into Anglo-Saxon, and with many magical devices, perhaps on account of the Apuleius, author of the "Golden Ass," and of the "Florida" who successfully defended himself from the charge of magic in the second century A.D. The Sphere of Apuleius is designed to prognosticate life or death by means of calculations based on the numerical value of the patient's name and the day of the month on which he fell sick. It appears frequently in early mediaeval MSS.

(3) British Museum. Cotton Cleopatra A iii folio 78 recto. Late ninth century. Anglo-Saxon script. (Published T. Wright's "Anglo-Saxon Vocabularies," edited by R. P. Wülker, London, 1884.) A page of anatomical terms from a Latin and Anglo-Saxon vocabulary. "Incipit de homine et de partibus eius." These vocabularies often throw interesting light on contemporary ideas as to anatomy and other subjects.

(4) British Museum. Harley 585, folio 160 recto. Eleventh century. (Published by O. Cockayne, "Anglo-Saxon Leechdoms," London, 1864-1866, vol. III.) From a collection of Anglo-Saxon remedies known as the "Lacnunga." The passage shown is the "Song of the nine healing herbs" and is of much greater antiquity than the manuscript. It is a pagan composition which invokes the aid of Woden.

(5) Lord Clifden (Lanhydrock) B. 12.16, folio 144. Eleventh century. (Published by H. Napier in Herrig's "Archiv für das Studium der neueren Sprachen," vol. LXXXIV, Kleinere Mittheilungen P. 325, Brunswick, 1890.) Anglo-Saxon recipes. Herbs for "Heort æch," etc.

(6) British Museum. Cotton Faustina A X, folios 115 verso and 116 recto. Eleventh century. (Published by O. Cockayne, "Anglo-Saxon Leechdoms," London, 1864-1866, vol. III, pp. 292-294.) Some recipes and medical charms used by the Anglo-Saxons. The ingredients of an all powerful eye salve, ecclesiastical charms against feverish chills (frigora) at every hour, against fevers, &c.

3
✓ (7) British Museum. Cotton Vitellius C III frontispiece. First half eleventh century. From Anglo-Saxon Herbal. Figures of "Esculapius, Plato, Centaurus." Two other copies of the Anglo-Saxon Herbal have survived, the British Museum Harleian 585 and the Bodleian Hatton 76. The text is in each case the same, each volume containing three works to which are attached the names of Apuleius, Dioscorides and Sextus respectively.

(8) From the same MS., folios 79 recto and 81 verso. Figures of beasts: the lion, the bull, the goat and the serpent. The Anglo-Saxon herbals, like their Latin prototypes, discuss beasts as well as plants.

(9) British Museum. Arundel 60, folio 1 r. Late eleventh century. "Ad Sanguinem Minuendum." A table of the lucky and unlucky days of the month for phlebotomy attached to a beautiful volume of the Psalter. This table is usually attributed to Bede, but does not here bear his name. Mr. J. P. Gilson considers that the handwriting indicates Winchester origin.

(10) St. John's College, Oxford. MS. 17, folio 175 recto. Eleventh century. (Published by Charles Singer in "Annals of Medical History," Philadelphia, New York, 1918.) Charm against nose bleeding used by Anglo-Saxons. wi blod rine of nosu wriht on his forheafod in Xristis mel

Stomen
Stomen meta calcos +
fofu
+

The mystic words may be recognized as forming the central phrase of the Liturgy of Chrysostom, *στῶμεν καλῶς στῶμεν μετὰ φόβου*. The Byzantine pronunciation of *φόβου* would be correctly transcribed "fofu" while the *ω* of *καλῶς* was mistaken by the Anglo-Saxon scribe for CO. The liturgy of Chrysostom presumably reached this country with Archbishop Theodore of Tarsus in the seventh century.

(11) British Museum. Cotton Caligula A XV, folio 125 verso. Twelfth century. English work. The Sphere of Apuleius again, this time in its more usual and complete form. The legends are in Greek, and partly in Greek script, by an English hand.

(12) Gonville and Caius College, Cambridge. $\frac{723}{130}$ folio 6. First half twelfth century. A scheme to illustrate the *functions* of the brain. It is divided into geometrical figures, and shows their supposed relationship to the senses of sight, smell and hearing. The idea of the triangles of the brain is derived from the Timæus of Plato.

(13) Bodleian Library, Bodley 130, folio 16 recto. Twelfth century. The Vetch. One of the most beautiful of the early English naturalistic drawings. ✓

(14) Bodleian Library, Ashmole 1462, folio 20 recto. Twelfth century. From a herbal of late Anglo-Saxon workmanship of the conventional school.

(15) Bodleian Library. Ashmole 399, folio 13 recto. Twelfth century and fifteenth century. An example of an early manuscript with the blank spaces utilized by a later hand. The beautifully clear twelfth century hand closes a work on Physiognomy and this is one of the rarer cases when the date is given: "Explicit phisonomi anno iesus Christi milesimo centesimo. liij." The remainder of the page has been utilized by a fifteenth century writer to note down some recipes—such as are constantly found on the spare spaces of pages of MSS. up to at least the sixteenth century.

(16) British Museum. Sloane 1975, folio 91 verso. Thirteenth century. Cutting the scalp for epilepsy. * This procedure was recommended by Hippocrates. The illustration is one of the latest of the English pictures that show no Norman influence.

(17) Bodleian Library. Ashmole 399, folio 34 verso. Thirteenth century. [Published by Charles Singer, *Proceedings of the Royal Society of Medicine* (Sect. Hist.), ix, p. 42, 1915.] Two pictures under Norman influence of lady apparently suffering from the vapours. She is being treated by the usual mediaeval restoratives, a feather dipped in vinegar applied to the nostrils, and a fire in the room in which presumably aromatic herbs are being burnt. The queer little puppy may represent some of the more repulsive of the mediaeval prescriptions.

(18) British Museum. Harley 4751, folio 6 verso. Thirteenth century. The Unicorn, from a bestiary. These "Bestiaries" discuss the moral, medical, marvellous and every other aspect of the beasts considered. The miniature illustrates the fable of the unicorn mentioned in Aelian, second and third centuries A.D., "De Natura Animalium," XVI, cap. 20, and popularized by Isidore of Seville (sixth century). This most savage animal, it appears, was gentle and affectionate to young maidens, who therefore acted as decoys for the huntsmen. We see here the unicorn laying its head against the maiden's breast while two huntsmen with spear and sword are simultaneously stabbing it from behind. A third huntsman in the rear bears an axe.

(19) From the same MS. Thirteenth century. The Caladrius. The sick monarch is shown lying on a couch, not daring to look for the verdict of the large white bird whose gaze, however, is turned full on him, thus showing that he will recover.

(20) Bodleian Library. Ashmole 391, folio 6 recto. Thirteenth century. (Published by Charles Singer, *Johns Hopkins Hospital Bulletin*, vol. xxx, No. 340, June, 1919.) Manus meditationis. No doubt it was the popular science of cheiromancy that suggested the form in which these rather beautiful little verses have been set forth on the page.

(21) British Museum. Arundel 295, folio 25 verso. Fourteenth century. Our modern hand of fate. Seated physician feels the pulse of seated female patient.

(22) British Museum. Arundel 251, folio 46 recto. Fourteenth century. Zodiacal man, with key. The twelve signs of the zodiac are placed on the parts of the body that they are believed to influence. The key on left shows that if the signs are written under one another in their usual order, beginning with the ram, and lines are drawn from them to a human figure, these lines will in fact link each organ of the body to the zodiacal sign connected with it by the astrologers. It is thus easy to see how the connexion was evolved.

✓ (23) British Museum. Egerton 2572, folio 51 verso. Late fourteenth century. From the Guild Book of the Barber Surgeons of York, figures representing the Four Humours grouped round the head of Jesus. Scroll work issuing from the hands of the figures towards the centre of the picture bears legends in English setting forth the connexion between the four elements and the four humours, "otherwysse calde the four complexions."

(24) Same MS., folio 51 recto. Volvelle for prognostics, supported by John the Baptist and John the Evangelist (above) and the medical saints Cosmas and Damian (below.) The volvelle consists of a movable pointer and circle of the days of the months, set on elaborately drawn concentric circles showing the signs of the zodiac, the names and symbols of the twelve months, and the days of the lunar and solar years.

✓ (25) British Museum. Sloane 965, folio 107 recto. Early fifteenth century. Following on an English translation of Guy de Chauliac we have here an English treatise on the four complexions, setting forth at length the "physiology" of the four humours and the organs especially connected with each.

(26) British Museum. Arundel 251, folio 37 recto. Fourteenth century. Disease mannikin, or human figure with the various diseases written on the parts liable to be attacked by them. Each foot, for example, is labelled "podagra."

(27) British Museum. Additional 17987, folio 101 recto. Fifteenth century. German work. Hæmatoscopy. On a table stand a number of vessels, containing specimens of blood. The physician has picked up one and discourses on it to a female patient. Pictures of hæmatoscopy are rare, though mediaeval texts on the subject abound.

✓ (28) British Museum. Additional 5467, folio 72 recto. Fifteenth century. English text on blood-letting, attributed to "Saynte Beede," This is not a translation of the text usually bearing the name of Bede, nor do the lucky and unlucky days cited correspond entirely to Bede's instructions on the subject.

(29) Bodleian Library. March 54, folio 25 verso. Fifteenth century. Arabic text of Albucasis, with very rough drawings of instruments for opening the artery behind the ears.

(30) Above: Bodleian Library. Rawlinson C 328, folio 110 recto. Fifteenth century. Below: Bodleian Library. E Museo 19, folio 162 recto. Fifteenth century. Illustrations to Latin translations of Albucasis. The upper drawing would be hard to understand by itself, but the lower figure makes it plain that each drawing is intended to represent the instrument for straightening the back described by Albucasis.

✓ (31) British Museum. Royal 15 E II, folio 77 verso. Fifteenth century. From a beautifully illustrated MS. of the *De Proprietatibus Rerum* of Bartholomaeus Anglicus. Physician's shop. The patient is nude but for a waistcloth. The physicians, in doctor's academic robes, stand on each side of him, one bearing ointment and the other a drug. In the front is the deerhound characteristic of this type of Renaissance work.

(32) From the same MS., folio 165 recto. Surgeon's shop. A surgeon, in the master's academic robes, is performing phlebotomy on a patient's arm. Another similarly robed surgeon is examining the urine bottle of his patient. On the left of the picture we see cripples with crutches making their way to the shop.

(33) Windsor Castle. Drawings of Leonardo da Vinci. Late fifteenth or early sixteenth century. (Published by Fonahm, Hopstock and Vangensten, "Quaderni d'Anatomia," vol. II, folio 3 verso, Christiania, 1911.) A beautiful and accurate drawing of the heart, showing the coronary vessels.

(34) Windsor Castle. Drawings of Leonardo da Vinci. Late fifteenth or early sixteenth century. (Published by Fonahm, Hopstock and Vangensten, "Quaderni d'Anatomia," vol. III, folio 8 recto, Christiania, 1911.) Folded babe in an opened uterus. An exquisite work of art, perhaps the masterpiece of all these drawings. Leonardo has enshrined for us thought and feeling in every accurate line, and the folded figure seems to embody in itself the mystery of man's destiny.

Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

Dies Aegyptiaci.¹

By ROBERT STEELE.

ON many mediaeval calendars certain days are marked Dies Aegyptiacus, D.E., or very rarely, Dies Aeger: more often a verse such as "*Prima dies mensis et septima truncat ut ensis*" is placed at the head of each month. These days are the "*dies maledicti*" or Egyptian days.

Three sets of them are known. The oldest set is of two days in each month, a second is found in the pseudo-Bede and comprises three Mondays in the year, and the third gives certain days in each lunar month. They were held to be unlucky for beginning any enterprise, and especially for bleeding.

The earliest reference to their existence is found in the *Fasti* of *Furius Dionysius Philocalus*, dating from A.D. 325-354, which have been published several times, last of all in the *Corpus Inscriptionum Latinarum* I, pt. 1.2, 256. In the Calendar twenty-five days are marked "*Dies Aegyptiacus*." No clue is given to their meaning, but as they immediately succeed the "*dies senatus legitimi*" established by Constantine, it is suggested by Mommsen that their origin is later than the foundation of the Byzantine empire.² They are not marked on a somewhat similar calendar, the *Fasti* of *Polemius Silvius* (c. A.D. 449). They are:—

Jan. 2, 6, 16.	Feb. 7, 25.	Mar. 3, 24.	Ap. 3, 21.	May 3, 21.	June 7, 20.
July 6, 18.	Aug. 6, 21.	Sep. 2, 19.	Oct. 3, 20.	Nov. 2, 24.	Dec. 4, 14.

¹ At a meeting of the Section, held December 18, 1918.

² The fact that St. Ambrose and St. Augustine both refer to them as "*diei posterius*" would seem to support the connexion suggested. In Non. Marcellus a verse is quoted giving the further equivalent, "*dies ater*." "*Septembris heri callendas hodie ater dies*." Non. Marcellus proceeds "*Atri dies dicuntur quos nunc nefastos vel posteros vocant*."

Traces of this list appear on early mediaeval calendars up to the tenth century. Harl. 3017, marks on its calendar:—

Jan. 2, 6.

Feb. 2.

Mar. 27.

We next hear of them from St. Ambrose (who wrote c. 383) in his Epistles I, 23: "Vel cavere quosdam dies, quemadmodum plerique posteros dies vel Aegyptiacos declinare consuerunt," when, writing to the bishops on the observation of Easter, he rebukes a number of superstitious observances.

St. Augustine, writing early in the fifth century, has a similar denunciation of their observance among Christians "Non observetis dies qui dicuntur Aegyptiaci." And again "Jam vero ne aliquid inchoetur, aut aedificiorum aut hujusmodi quorum libet operum. Diebus quos Aegyptiacos vocant, saepe enim nos monere non dubitant . . ." Ep. ad Gál. c. 4. "Non proficiscar hodie quia posterus dies est aut quia luna sic fertur." Ep. 55, c. vii (13).

The observation of these days by the Neo-Platonist philosopher Proclus (412-485 A.D.) is recorded by his biographer Marinus, who succeeded him in his chair. *Kaì τὰς παρ' Αἰγυπτίοις δὲ ἀποφράδας ἐφύλαττε μᾶλλον ἢ αὐτοὶ ἐκείνοι.* "Dies Aegyptiis infaustos diligentius observabat quam ipsi Aegyptii" (c. 19).

Salmasius (De annis climactericis, p. 816) quotes from two Greek manuscripts (unidentified, as his manner is), lists of dies Aegyptiaci. One of them is said to have been revealed to Esdras, and hence may perhaps belong to the sixth or seventh century, but is more probably much later. I quote the original and Salmasius's translation, which does not coincide with it:—

Ἐν ταύταις γὰρ ταῖς ἡμέραις θάσθενῶν οὐκ ἀνίσταται ὁ γάμος ποιῶν οὐ χαίρει, ὁ εἰς πόλεμον ἐπάγων οὐκ ἀναστρέφεται, ὁ πραγματευόμενος ἀπόλλει ἢ τετράποδον ἢ δοῦλον, ἢ ὄρκον ποιῶν, ὁ κτίζων οὐ στήκει, ὁ εἰς κριτήριον πίπτων μετὰ ὑβρεως καὶ αἰσχύνης στρέφεται.

"Alias alibi inveni . . . quas auctor dicit a Deo monstratas esse Esdrae sacerdoti et prophetae, ut per eum populo Israelis declararentur, et scirent quibus diebus in unoquoque mense abstinere deberent a coitu cum uxore, a plantarum insitione, sanguinis missione, et ab aliis multis operibus."

The dates are as follows. They are given in Greek numerals, but use the Roman months.¹

Jan. 2, 4.

Feb. 16, 21.

Mar. 4, 20.

April 3, 20.

May 6, 20.

June 3, 18.

July 6, 20.

Aug. 1, 5.

Sep. 3, 21.

Oct. 3, 20.

Nov. 5, 11.

Dec. 3, 24.

¹ The dates in heavier type correspond with those of the normal mediaeval list.

The second list is different:—

Jan. 2, 4.	Feb. 2, 26.	Mar. 4, 20.	April 3, 20.	May 7, 22.	June 3, 12.
July 6, 22.	Aug. 4, 15.	Sept. 3, 14.	Oct. 3, 21.	Nov. 5, 11.	Dec. 3, 14.

From the eighth century on we find lists of the Egyptian days, separated from the calendar. As might be expected these lists show much variation. Only a few use the Roman method of dating, and these are presumably copies of earlier date. We know of MSS. Einsiedler 319, Titus D, XXVI, and Sl. 475, all of the tenth or eleventh centuries, and the dates are given as alternatives to the common verses "Si Tenebrae" (p. 7). They are:

Einsiedler, 319 (tenth century).

Jan. 3, 26.	Feb. 8, 25.	Mar. 12, 23.	April 3, 20.	May 7, 22.	June 9, 25.
July 13, 23.	Aug. 7, 24.	Sept. 6, 30.	Oct. 10, 29.	Nov. 6, 23.	Dec. 8, 24.

Sl. 475 (late eleventh century).

Jan. 2, 25.	Feb. —, 26.	Mar. —, 28.	April 10, 20.	May 1, 25.	June 10, 16.
July —, 22.	Aug. —, 30.	Sept. 5, 21.	Oct. 4, 22.	Nov. 5, 28.	Dec. —, 15.

Titus B, XXVI (late tenth century).

Jan. 2, 24.	Feb. 8, 24.	Mar. 3, 27.	April 3, 23.	May 6, 17.	June 9, 16.
July 7, 22.	Aug. 7, 20.	Sept. 2, 25.	Oct. 3, 26.	Nov. —, —.	Dec. —, —.

The more usual method of dating in such lists is the Bononian method, in which the days of the latter half of any month are reckoned from its last day. This method is also used in the verses concerning the Egyptian days which will be given later. The earliest dated manuscript in which its use is found is of A.D. 785, but if the verses attributed to Bede in the Hymns are his, it must have been in use before A.D. 731.

Berne 318 (ninth century) gives an alternative list in this form, "Januarius die II et antequam exeat die III."

Jan. 2, 29.	Feb. 3, 26.	Mar. 3, 25.	April 3, 20.	May 7, 25.	June 8, 19.
July 13, 20.	Aug. 6, 20.	Sept. 3, 24.	Oct. 8, 20.	Nov. 12, 24.	Dec. 12, 24.

A MS. in Tironian notes at Wolfenbüttel, of a different tradition, reckons similarly

Jan. 2, 18.	Feb. —, 20.	Mar. 4, 23.	April 3, 20.	May 6, 20.	June 3, 18.
July 6, 21.	Aug. 6, 21.	Sept. 3, 16.	Oct. 3, 21.	Nov. 6, —.	Dec. 3, 23.

Reichenau 172 (ninth to tenth century), has the following list:—

Jan. 3, 24.	Feb. 8, 24.	Mar. 3, 19.	April 3, 18.	May 6, 17.	June 9, 16.
July 9, 22.	Aug. 6, 20.	Sept. 3, 25.	Oct. 3, 17.	Nov. 5, 26.	Dec. 12, 22.

The lists yet given do not correspond with that commonly received in the Middle Ages in more than two or three days. That in Reichenau

229 (A.D. 785) beginning "Hi sunt dies egyptiaci apud dominum maledicti" is

Jan. [1], 25.	Feb. 8, 22.	Mar. 3, 25.	April 10, 20.	May 3, 27.	June 10, 16.
July 14, 22.	Aug. 6, 20.	Sept. 3, 21.	Oct. 9, 22.	Nov. 5, 28.	Dec. 13, 15.

So Harl. 3017, f. 59, and Add. 22398, f. 104.

Reichenau 167 (ninth century) has this list:—

Jan. 1, 25.	Feb. 4, 26.	Mar. 1, 28.	April 10, 20.	May 3, 25.	June 10, 16.
July 13, 22.	Aug. 1, 30.	Sept. 3, 21.	Oct. 3, 31.	Nov. 5, 28.	Dec. 12, 15.

The pseudo-Bede "de minutione sanguinis" has

Jan. 1, 25.	Feb. 8, 22.	Mar. 3, 25.	April 10, 20.	May 4, 24.	June 8, 26.
July 17, 22.	Aug. 5, 17.	Sept. 9, 22.	Oct. 9, 22.	Nov. 5, 25.	Dec. 15, 24.

Paris. cod. lat. 1338 (tenth century) has:—

Jan. 1, 25.	Feb. 4, 26.	Mar. 1, 28.	April 10, 20.	May 3, 25.	June 10, 16.
July 13, 22.	Aug. 1, 30.	Sept. 3, 21.	Oct. 3, 31.	Nov. 5, 28.	Dec. 12, 15.

The commonly accepted days are:—

Jan. 1, 25.	Feb. 4, 26.	Mar. 1, 28.	April 10, 20.	May 3, 25.	June 10, 16.
July 13, 22.	Aug. 1, 30.	Sept. 3, 21.	Oct. 3, 22.	Nov. 5, 28.	Dec. 7, 22.

Before passing on to the verses in which these Egyptian days were enumerated, we must turn to the rubrics of the foregoing lists. Many of them have two differing statements, collected from different sources and preserved by the scribe with little care to harmonize them. The earliest rubrics resemble in some ways the passage of the Greek MS. quoted by Saumaise, and seem to indicate a Greek origin, while their differences mark an independent translation:—

"Hi dies observandi sunt, ne in itinere exeas, non vindemia colligas, non plantetur, non vendatur, nec animalia domitetur, nec quod volueris in profectum venire in suprascriptos dies nullatenus incipiatur, quia hi dies a domino maledicti sunt." (Berne 318.)

"Hi sunt dies egyptiaci qui in anno observandi sunt per unumquemque mensem. In diebus istis non iteratur homo, non vinea plantatur, non causa sequatur, non messis trituretur, nec ullum opus quod ad profectum esse debet faciat, quia hi dies a domino maledicti sunt." (Reichenau, 172.)

"Incipiunt dies aegyptiaci qui in anno observandi sunt per unumquemque mensem. ii. duo, non iteratur homo, non vinea plantatur, non messis trituretur, non causa sequatur, non opus quod ad profectum esse debet facere, quia maledicti sunt." (Titus D. XXVI.)

Another form of this rubric is found:—

"Observandi sunt in his diebus si quis in lectum ceciderit non cito evadet, nullum genus peccoris in his diebus dometur aut aliquis a parentibus separetur, quoniam sic factum fuerit, non proderit. Nulla opera tunc incipiuntur." (Reichenau 120.)

This follows a list of unlucky days of the moon, first, fifth, ninth, fifteenth, and the three days before and after new moon, but in Reichenau 167, it is applied to the Egyptian days, perhaps in error:—

"In istis diebus si quis in lectum ceciderit, non cito evadit; nullum genus pecoris his diebus domatur, aut aliquis a parentibus separatur, ea causa quod si increpaveris nihil proficiet; nulla opera tunc incipientur."

The probability that the source of these days was Greek is increased by finding them in Budge's "*Syriac Book of Medicine*" II, 557, a collection of recipes and treatises, many of them of Byzantine origin. The dates and rubric are: "The evil days of the months—

Jan. 2, 3, 11, 14.	Feb. 7, 11, 20, 21.	Mar. 4, 5, 20, 21.	April 3.
May 6, 20.	June 3, 18.	July 6, 20.	Aug. 1, 4, 15.
Sept. 3, 10, 20.	Oct. 3, 6, 20.	Nov. 3, 5, 11.	Dec. 3, 20.

"If a man falleth sick on any one of these days he will not live. And if a man be born on any one of them, he will not live. And if he make a feast on any one of them, he will have no pleasure therein. And if he setteth out on a journey on any one of them, or if he goeth forth to war, he will be conquered by his enemies. And if he planteth a vineyard on any one of them, it will not thrive. And if he goeth on a journey, evil will befall him. And if he getteth married, he will be destroyed, for these days are evil and are lacking (in good), even as the Living God commanded the children of Israel by the hands of Moses. . ."

It will be seen that up to the end of the tenth century the twenty-four Egyptian days had no special medical signification, the prognostication as to sickness being attached to the evil days of the moon, and the prohibition of blood-letting being originally attached, as will be shown later, to the three Mondays.

At a comparatively early date the Egyptian dates were enumerated in the form of verse. The earliest and rudest of these are found in the Hymns of Bede, first printed from an unknown manuscript by Hervagius, at Basle, in 1563. The editor seems to have been J. Pamelius. They are accepted as genuine and are therefore prior to A.D. 731. They run as follows:—

Prima neeat Jani, nocet astans septima fini.
 Quarta neeat Februi, nocet astans tertia fini.
 Mars tua frons cuspis, prope finem quarta fit aspis
 Aprilis decimam, notat undecimam prope caudam.
 Tertia mors Maii, sed septima proxima fini
 Junius in decimo ferit et quindenus ab imo.
 Alter ab undecimo, nepa Juli nonus ab illo
 Augusti primus ferit et de fine secundus.
 Stat Septembris acus hinc tertius inde decenus
 Octobris stat acus, hinc tertius inde decenus.
 Quinta neeat capitis sed tertia fine Novembris
 Frontis septenam notat ultimus ordo decenam.

The only variation from the accepted list is July 23 for 22.

Early in the ninth century an improved set of verses, printed by Riese in the "*Anthologia Latina*" I, 2-156 (680a olim 736), became popular. The six introductory and four concluding lines seem to be of later date than the month verses.

Si Tenebrae Aegyptus Graio sermone vocantur
Inde dies mortis tenebrosos jure vocamus.
Bis deni binique dies scribuntur in anno,
In quibus una solet mortalibus hora timeri
Mensis quisque duos captivos possidet horum
Nec simul hos junctos homines ne peste trucident.

Jani prima dies et septima fine timetur
Ast Februi quarta est, praecidit tertia finem.
Martis prima necat, cujus sub cuspide quarta est.
Aprilis decima est, undeno et fine minatur.
Tertius in Maio lupo est et septimus anguis,
Junius in decimo quindenum a fine salutatur.
Tredecimus Juli decimo innuit ante Kalendas
Augusti nepa prima fugat de fine secundam.
Tertia Septembris vulpis ferit a pede denam
Tertius Octobris pullus, decem in ordine nectit.
Quinta Novembris acus, vix tertia mansit in urna
Dat duodena cohors septem inde decemque Decembris.

His caveas, ne quid proprio de sanguine demas
Nullum opus incipias, nisi forte ad gaudia tendat.
Et caput et finem mensis in corde teneto
Ne in medio ima ruas, sed clara per ethera vivas.

It will be observed that the preface limits the evil effect of the day to one particular hour in it, which is not indicated, while the end verses bring in the prohibition of blood-letting.

From this time on there is little or no variation (except by scribal error) in the dates given by the verses. A variant for January is sometimes found (e.g., Berne 260, fourteenth century):—

"Jani prima dies et tertia fine timetur."

and St. Johns MS. 18, agreeing with another list, for February:—

"Ast Februi quarta est, sed septima serviet umbris."

Most MSS. of the ninth, tenth, and eleventh centuries have these verses, and they appear in a printed Ambrosian Missal of 1522.

A variant is found in Sloane 475, an English MS. of the late eleventh century, which may be the original form:—

Jani prima dies et septima fine timetur.
 Principio Februi quarta est et tertia fine
 Martis prima necat cujus sic cuspide quarta est.
 Aprilis luctus in x. est undenaque finem.
 Maii tertia fit mors et grave septima letum
 Junii bis quina est necnon quindena periculum.
 Julii tredecimam fugias decimamque sequentem,
 Augusti mala prima, cave de fine secundum.
 Tertia Septemberis caveatur denaque finis
 Octobris paribus sit, tertia denaque lege.
 Quinta Novemberis in hac et tertia lege tenentur
 Septima fit pestis, idens et dena Decembris.

A list of hours was soon discovered and incorporated with the verses. One of the earliest forms is printed by Muratori (*Rer. Ital. Script. II*, 2, 1035) from a tenth century calendar. It is also found in Eg. 1139, a manuscript executed for Melissenda, Queen of Jerusalem, in the first half of the twelfth century.

- 1 Prima dies nona sit Jani scorpius hora
 Vulnera seva nimis fert horis septima quinis.
- 3 Quartus in octonis Februi manet ut lupus horis
 In denis ternis est horis fine timendus.
- 5 Dando diem primam dabit horam Marcius ipsam
 Quarta nec est munda cui nocet hora secunda.
- 7 Horis in primis decimus suffocat Aprilis.
 Undecimus nonas ferit inde diesque per horas.
- 9 Interimit terna Mai lux horaque sexta
 Estque mali moris in denis septimi horis.
- 11 Quinta nocet deni Junii satis hora diei
 Horis quartanis quindenis mordet ut anguis.
- 13 Dampnat tredecima Julius vorat hora secunda
 Hujus et in nonis decimus quaque sauciat horis.
- 15 Horas dat primas Augustus datque kalendas
 Inde secunda dies septenas turbidat horas.
- 17 Horis September perimit lux tertia ternis
 Ejusdem mensis necat horis decima quaternis.
- 19 Sauciat Octobris in quinis tercius horis
 Inde die dena hujus fert hora novena.
- 21 Pungit in octonis horis lux quinta Novemberis
 Cujus terna nigram facit horam confore quintam.
- 23 Vulnerat in primis horis (septena) Decembris
 Septimus in senis decimus sit causa doloris.

The list of hours varies from manuscript to manuscript. Some variants are l. 4, Undecimus ternus est. Eg. l. 14, Tredecimus

mactat Julius decimus labefactat. Eg. 1. 18, decima M. 1. 20, Hincque dies dena ferit hujus hora octava. Eg. 1. 23, Vulnerat in quinis horis duodena Decembrem M. 1. 24, Hincque senis horis decimus fit causa doloris. Eg. The days and hours are :—

Jan. 1 (9), 25 (5).	Feb. 4 (8), 26 (10).	Mar. 1 (1), 28 (2).	Ap. 10 (1), 20 (9).
May 3 (6), 25 (10).	June 10 (5), 16 (4).	July 13 (2), 22 (9).	Aug. 1 (1), 30 (7).
Sept. 3 (3), 21 (4).	Oct. 3 (5), 22 (9).	Nov. 5 (8), 28 (5).	Dec. 7 (1), 21 (7).

Another set of verses is quoted by Muratori from an Ambrosian MS. of the eleventh century :—

- 1 Nona prote Jani vae sibilat hora diei
Septima fine dies in quinta parvulus est serps.
- 3 In quarto Februi fas est octava timeri
Tertia lux decima de cuspide laedit in hora.
- 5 Prima notat primam lux Martis mordicus horam,
Quarta dies nequam damnat de fine secundam.
- 7 Lux parit Aprilis decimam primam velut anguis,
Clamat in undecimo de cuspide nona nociva.
- 9 Tertius est Judas in Maio, sextaque Elisas,
Septimus in decima serpens est lividus hora.
- 11 Juni dena dies in quinta constat Ofites,
Quindenius quarta vocat horam fine sagitta.
- 13 Terdecimo Juli stat linea dena timeri,
In nona decimus de cuspide fit basiliscus.
- 15 Cernitur Augustus primae nepa prima diei,
Est in septena lux noxia fine secunda.
- 17 Tertia Septembris in quinta quaeritur hostis,
Et pede dena dies in quarta funeris hospes.
- 19 Tertius Octubris in quinta quaeritur hostis,
Nititur undecimo fore pestis linea nona.
- 21 Est acus octava lux quinta Novembris in hora,
A pede terna manet cui pessima quinque cohaeret.
- 23 In prima Caneri lux est septena Decembris,
Sic nocet undecimus, septaque mortalibus hora.

Jan. 1 (9), 25 (5).	Feb. 4 (8), 26 (10).	Mar. 1 (1), 28 (2).	Ap. 10 (1), 20 (9).
May 3 (6), 25 (10).	June 10 (5), 16 (4).	July 13 (10), 22 (9).	Aug. 1 (1), 30 (7).
Sept. 3 (5), 21 (4).	Oct. 3 (5), 21 (9).	Nov. 5 (8), 28 (5).	Dec. 7 (1), 21 (7).

the dates being wrong for October 21 and December 21.

A calendar is printed in the first edition of Bede (I, 242) which, besides the verses beginning " Jani prima dies et septima fine timetur " has the following hour indications, in a separate line :—

Jan. 1 (1), 25 (5).	Feb. 4 (8), 26 (5).	Mar. 1 (1), 28 (2).	Apr. 10 (1), 20 (9).
May 10 (7), 25 (10).	June 10 (5), 16 (4).	July 13 (11), 25 (9).	Aug. 1 (1), 30 (7).
Sept. 13 (11), 21 (9).	Oct. 3 (5), 22 (9).	Nov. 5 (8), 30 (4).	Dec. 7 (1), 22 (8).

varying in dates on May 10, July 25, September 13, November 30.

A very common set of verses is found as early as the eleventh century (Zurich C., 58, f. 28), though the hour verses, being separable from the day verses, may be of later date.

- 1 Prima dies Jani, timor est et septima vani :
Nona parit bellum sed quinta dat hora flagellum.
- 3 Alterius mensis, post quartum tertius ensis :
Nullus ut octave, vel dene dixerit ave.
- 5 Martius in prima, cum quarta ducit ad ima :
Prima nocet multum, nullum dabit altera cultum.
- 7 Cum decimus cedit, undenis Aprilis obedit :
Prima petit telis, quem nona requirit Aprilis.
- 9 Tertius hic captat, Maii quod septimus aptat :
Sexta minus sordet, cum vulnera dena remordet.
- 11 Cui nil dena dabit, Junii quindena negabit :
Ledit quinta cutem, nulli dat quarta salutem.
- 13 Terdecimus fortis, Julii decimus via mortis :
Est lupus undena, pariter quoque nona laena.
- 15 Sexti prima furit, a fine secunda perurit :
Cuspide prima ferit, quae septima perdere querit.
- 17 Tertia turbatur, Septembris dena minatur :
Tertia Septembris et quarta dabunt mala membris
- 19 Tertius Octubris, nulli decimusque salubris :
Quinta dat Octubris, cui nona venena colubris.
- 21 Quinta Novembris obest, nulli lux tertia prodest :
Est octava canis, fore quarta videtur inanis.
- 23 Hoc dat bisseña, decimique, septima dena :
Prima parat luctum, nullum dat septima fructum.

This works out thus:—

Jan. 1 (9), 25 (5).	Feb. 4 (8), 26 (10).	Mar. 1 (1), 28 (2).	Apr. 10 (1), 20 (9).
May 3 (6), 25 (10).	June 10 (5), 16 (4).	July 13 (11), 22 (9).	Aug. 1 (1), 30 (7).
Sept. 3 (3), 21 (4).	Oct. 3 (5), 22 (9).	Nov. 5 (8), 28 (4).	Dec. 7 (1), 22 (7).

The Zürich MS. adds to l. 23 "Septima cum dena decimi dat vulnera plena."

When the fashion of leonine verse became widespread, early in the twelfth century, the following set was composed, probably in England, as it is found in Sarum, York, and Hereford calendars. The earliest English MS. (early twelfth century) is l.D.x. Others are Ar. 157, 2.B.VI., Tit. B. III, Harl. 3601 (A.D. 1295), Queen Mary's Psalter, the Gorleston Psalter, and others similar to it.

- 1 Prima dies mensis et septima truncat ut ensis.
Quarta subit mortem prosternit tertia fortem.
- 3 Primus mandentem, dirumpit quarta bibentem.
Denus et undenus est mortis vulnere plenus.
- 5 Tertius occidit et septimus ora relidit.
Denus pallescit quindenus federa nescit.
- 7 Terdenus mactat Julii denus labefactat.
Prima necat fortem, perditque secunda cohortem.
- 9 Tertia Septembris et denus fert mala membris.
Ternus et denus est sicut mors alienus.
- 11 Scorpius est quintus, et tertius est nece cinctus.
Septimus exsanguis, rivosus denus ut anguis.

Later variants are 1.8 Percutit ut funda, lux prima diesque secunda (late fourteenth century) 1.11 Quinta Novembris, vix tertia manet in urnis (York Missal). In 1.8 "Sternitque" is sometimes found for "perditque."

A thirteenth century variant of the "Si tenebrae," published by Götz and Lowe from Laurentian St. Mark 249, without hours, is:—

- 1 O miserum mortale genus, quis noscere possit
Que fugienda tibi, que tuto rite sequenda.
- 3 Dum res nulla manet sub (tempore) tu quoque semper
Volueris et multa rerum de morte laboras.
- 5 Hoc vere vivis sed multa morte fatiscis
At qui differris quedam nocitara cavere.
- 7 Cogaris in quantum tua se vigilantia tollit
Que geminos in mense dies quocunque timendos.
- 9 Corporis in cura tradit ne fundere cautus
Quisquam praesumat certa de luce cruorem.
- 11 Solvere, vel venerem salubrem aut temptare regestum,
Jani prima dies et septima fine minatur.
- 13 Principio Februi quarta est et tertia fine.
Martis prima necat cujus sub cuspide quarta est.
- 15 Aprilis decima est undenaque fine timetur.
Maii tertia lux et septima fine cavetur.
- 17 In decima simul et quindena Junius obstat.
Ternam post decimam Julii fuge fineque denam.
- 19 Prima sub Augusto nocet et de fine secunda.
Septembris ternam primo fuge cuspide denam.
- 21 Creditur October nocuisse diebus eisdem.
Novembris quintam caveas et cuspide ternam.
- 23 Undena est capitis in fineque dena Decembris.
Has Egiptiacis antiquo nomine lucis
- 25 Dicunt quod celi cura studiosior orbis
Egipti nocuas ex re persenserit illas.

Another set of verses is reprinted from Loiseleur : Mem. Soc. Ant. Fr. 33 (1872), p. 248, from an Orleans Missal :—

- 1 Dat prima undenam Jani pede septima sextam,
Februarii octavam quartam pede tertia denam.
- 3 Mars primam prima finalis quarta secundam,
In decimo prima est undeno undenaque Aprilis.
- 5 Tertius in Maio sextam pede septima denam,
In decimo sextam Junii, quindenaque quartam.
- 7 Tridecimo undenam Julius pede denus eandem,
Augusti in prima est pars septima sive secunda.
- 9 Tertius Octobris quinta decimus pede novam.
- 11 Octavam quinti Novi pede tertia sextam,
Septima dat prima, sextam pede dena Decembris.

The hours being :—

Jan. 1 (11), 25 (6).	Feb. 4 (8), 26 (10).	Mar. 1 (1), 28 (3).	Ap. 10 (1), 20 (11).
May 3 (6), 25 (10).	June 10 (6), 16 (4).	July 13 (11), 22 (11).	Aug. 1 (7), 30 (7).
Sept. 3 (4), 21 (4).	Oct. 3 (5), 22 (9).	Nov. 5 (8), 28 (6).	Dec. 7 (1), 22 (6).

To conclude, the following set of hour verses is found in a St. Mark's MS. 173 of the fifteenth century (Valent. 3.117) :—

- 1 Est Janus in nona et quarta scorpius hora,
Inficit octavam Februi lupus et leæna denam.
- 3 Mars habet infestam dubius primam atque secundam,
Est acus Aprilis in primis atque novenis.
- 5 Maius habet sextam, decimam quoque febre perustam,
Est Junii quinta serpens et quarta sagitta.
- 7 Julius undecimam nonam simul igne perurit.
Augusti serpens prima est et septima vulpis.
- 9 Tercia Septembris vulpis ferit a pede dena.
Octobris quintam, nonam simul aspis oberrat.
- 11 Languet in octava et quarta sub peste Novembris,
Condemnat primam et sextam quoque clade perustam.

Jan. 1 (9), 25 (4).	Feb. 4 (8), 26 (10).	Mar. 1 (1), 28 (2).	Ap. 10 (1), 20 (9).
May 3 (6), 25 (10).	June 10 (5), 16 (4).	July 13 (11), 22 (9).	Aug. 1 (1), 30 (7).
Sept. 3 (3), 21 (10).	Oct. 3 (5), 22 (9).	Nov. 5 (8), 28 (4).	Dec. 7 (1), 22 (6).

During the revival of the twelfth century the Egyptian days come into literature. Honorius, Bishop of Autun, who died in A.D. 1130, mentions them in his compendium "*De Imago Mundi*," ii, 109.

"*Dies Aegyptiaci* ideo dicuntur quia ab Aegyptis sunt inventi. Et quia Aegyptus dicitur tenebrae, ipsi tenebrosae inde nominantur, eo quod incautos ad tenebras mortis perducere affirmantur."

Peter Comestor in his "*Historia Scholastica*," c. 24, lib. Exod., written c. 1150, says :—

"Unde quidem dies Aegyptiaci dicuntur, quia in his passa est Aegyptus, quorum duos tamen in singulis mensibus notamus ad memoriam, cum plures forte fuerint. Nec est credendum quod Aegyptii, licet astrorum periti, deprehenderint dies hos infaustos in inchoatione operis, vel itineris, vel minutionis."

Ivo of Chartres in his "Panormia" (1096) and subsequently Gratian in his "Decretum" (1148), caus. 26, q. 7, c. 16, quote St. Augustine, whose prohibition thus becomes part of Canon Law. The Egyptian days are not mentioned by Burchard, or by the German penitentials.

Uguccio, Bishop of Ferrara, is quoted as writing:—

"In quolibet mense dicuntur duo dies mali Aegyptiaci, quia ab Aegyptiis fuerunt inventi. Aegyptii enim comperientes quod in aliqua hora dierum illarum non erat bonum sanguinare, id est sanguinem minuere, ne aliquid opus inciperetur, illos dies vocaverunt."

There are many references in thirteenth century writers, and among them we find two sets of verses for remembering the days. One is found in the "Rationale" of Durandus, lib. 8, c. 4, n. 20.

"Augurior decios audito lumine clangor,
Liquit olens abies, coluit colos, excute gallum."

In this the first letter of the first syllable gives the number of the day of the month from the beginning, the first letter of the second syllable that from the end; e.g., "a" is the first letter and "g" the seventh—i.e., the first of January and the twenty-fifth (the seventh from the end) are the Egyptian days. Similarly in liquit "l" is the tenth letter and "q" the fifteenth (h is not counted), therefore the 10th and 16th of June are the Egyptian days.

Vincent of Beauvais in his "Speculum Naturale," lib. 15, c. 83, gives a different form, probably earlier:

"Argue discernens ad lucem coge loquelas,
Ollas abbatum cole calibus excute gallum."

An imperfect set of day and hour verses is given by Hampson as from Harl. 863.

- 1
- 2 Quarta dat octavam (tertia) dat denam prenomem
- 3
- 4 Dene prima premit, undene undena pereant.
- 5
- 6 Dene sexta minans undene quarta suspirans
- 7
- 8
- 9 Tertia lux terna nocet hora dena quaterna
- 10
- 11 Octavum quinta noni pede tertia quintam
- 12

The earliest documents connecting blood-letting with the days of peril are two tracts included in the first complete edition (Basle, 1563) of the works of Bede. One is attached to the "Horologium," and consists of a paragraph, "De tribus diebus periculosis," followed by the verses "Si Tenebrae" (p. 113): the second is attached to the "De minutione sanguinis," and consists (1) of a similar paragraph, (2) a prose list of the Egyptian days and of the days of the moon in each month unfavourable for bleeding and purging, (3) a presage of the days of the lunar month, followed by a note as to the danger of the dog-days, and other periods in which bleeding and purging are desirable. The passages relating to the three Mondays are here given as printed:—

DE TRIBUS DIEBUS PERICULOSIS.

"Sunt tres dies in anno, qui per omnia observandi sunt. 8 idus Aprilis, ille dies lunis, intrante Augusto, ille dies lunis, exeunte Decembre, ille dies lunis observandus est, in quibus omnes venae in homine et in pecude plenae sunt. Qui in his hominem aut pecus percusserit, aut statim, aut 3 die morietur, aut 7 die periclitabitur. Et si potionem acceperit, intra 15 dies morietur. Et si masculus aut foemina in his diebus nascuntur, mala morte morientur. Et si de auca in his diebus aliquis manducaverit, intra 15 vel 40 dies morietur" (p. 467).

DE MINUTIONE SANGUINIS.

"*Plures sunt dies aegyptiaci, in quibus nullo modo nec per ultimam necessitatem licet homini vel pecori sanguinem minuere, nec potionem impendere sed ex his tribus maxime observandi, octavo idus Aprilis, illo die lunis, intrante Augusto: illo die lunis, exeunte Decembre: illo die lunis, cum multa diligentia observandum est, quia omnes venae tunc plenae sunt.*

"Qui in istis diebus hominem aut pecus inciderit, aut statim aut in ipso die vel in tertio morietur, aut ad septimum diem non perveniet: et si potionem quis acceperit, quindecimo die morietur: et si masculus sive mulier in his diebus nati fuerint, mala morte morientur: et si quis de auca in ipsis diebus manducaverit, quindecimo die morietur" (p. 473).

Setting aside the introductory remarks in the second passage, it seems obvious that we have here such differences as would point to separate translations of a common original at present unknown, most probably Greek. The MS. from which these tracts were printed has not yet been identified, but the identification should be simple since all known manuscripts make the first Monday that following 8 kal. Ap., not 8 id. It was probably an English one, as it is only in

English forms that the prohibition of eating goose is found: though it is inserted in the "Schola Salernitana" and may possibly have been connected with it.

The "Horologium" form has not been found elsewhere, but we find the other in a group of MSS. associated with works of Bede, and written, in districts evangelized by British influence, during the ninth and tenth centuries. Thus Reichenau 120, f. 211 vo., contains (1) a prose list of the Egyptian days and of the unfavourable days of the moon, (2) the paragraph "Si quis in lectum," (3) the three Mondays, as in Reichenau 120, (4) the unfavourable days of the moon. The Moustier Missal (early eleventh century) has the three Mondays as in Reichenau 167. Harl. 1772 has the three Mondays and goose prohibition in a late ninth or tenth century hand on the margin of f. 112 vo. Titus D. XXVI, the Newminster book, of late tenth century, has (1) the three Mondays, as in the "de minutione," (2) a note of Hebrew origin as to three other days, and, later on in the book, (3) the presage for each day of the lunar month. In Titus D. XXVII, we have the presage for each day, and later on, (1) the month verses of "Si tenebrae" with their conversion into the Roman calendar, (2) a shortened form of the three Mondays, and (3) in a note two other prohibitions from the end of the "de minutione"—as to the dog-days and days of the lunar month.

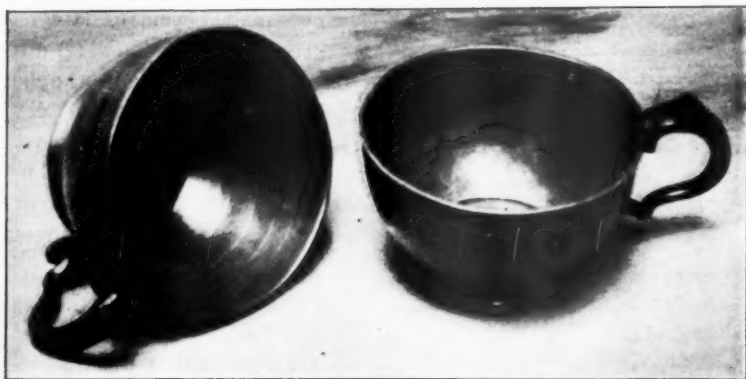
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**Note on Some Old Pewter Bowls in the Royal Mineral
Water Hospital at Bath.¹**

By C. J. S. THOMPSON.

ON visiting the old Royal Mineral Water Hospital at Bath some months ago, I noticed some old pewter bowls, which the Secretary told me had been in the hospital since its foundation in 1742. From the



time of Queen Elizabeth, by Act of Parliament, the poor had a right to the free use of the Bath waters, and this institution was established so that the deserving poor who really needed treatment, might save the expense attending a long residence in Bath, and at the same time receive the advantages of a course of the waters. Beau Nash and Sir Richard Steele, of *Spectator* fame, were among its chief promoters.

Local opinions vary as to the original use of these bowls. By some they are thought to be old bleeding basins, formerly used in the hospital, and it has been suggested by others that they are bowls that were used for administering the Bath waters to patients. The Committee have kindly lent me two specimens, which I have brought for your inspection.

¹ At a meeting of the Section, held November 20, 1918.

I may say, on examination, I find from the mark or "touch" on the bottom of each vessel, that they were made by Edgar and Son, pewterers, of Edinburgh, who flourished in the eighteenth century. The graduations marked on the inside measure 4, 8, 12, 16 and 20 oz. to the brim. Bleeding bowls of the same period are usually graduated either from 2 to 16 oz., or from 4 to 24 oz. The shape of the handles supports the theory that they were used as drinking vessels.

Referring to some of the early books on the Bath waters, to ascertain the quantities given for internal use, I find Dr. Wilkinson, in his "*Researches on the Bath Waters*" in 1811, states that the "quantities to be taken should be from four to eight ounces twice a day," which corresponds to the graduated marks on these bowls. Joseph H. Spry, in his treatise on the Bath waters, published in 1822, recommends the fourth of a pint. After two days this is to be increased to one-third of a pint, and then gradually increased at intervals to one pint.

In the discussion that followed, in which Sir D'Arcy Power and Dr. Raymond Crawford joined, it was the general opinion that the bowls were originally used for administering the waters to hospital patients in the latter part of the eighteenth century.

Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

The Lorica of Gildas the Briton (? 547). A Magico-medical Text containing an Anatomical Vocabulary.¹

By CHARLES SINGER.

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(I) INTRODUCTION.

IN dealing with the medicine of the Dark Ages, that is the period from the fifth to the eleventh century, we are faced with a very different task to that presented to the investigator of the Middle Ages proper. The material for setting forth the science of the Middle Ages is embarrassing by reason of its vast bulk; for the Dark Ages we have to deplore the scarcity of our records and in order to fill in the details of the picture have frequently to resort to works not intended exclusively for medical use. In what follows we shall discuss a Dark Age document of this non-medical type of British origin.

The very little known of the practice of medicine in England during the Roman occupation has been collected.² But the Romans abandoned this country in the early years of the fifth century, and from then until the appearance of Anglo-Saxon medical documents, the earliest manuscript of which can hardly be dated before the tenth century, first hand evidence is practically non-existent. Of the medicine of the Celtic speaking inhabitants of these islands during the first millennium nothing is now recoverable by the direct method, though a small amount of

¹ At a meeting of the Section, held May 15, 1918.

² Henry Barnes, "On Roman Medicine and Roman Medical Inscriptions found in Britain," *Proc. Roy. Soc. Med.*, vii, Lond., 1911 (Sect. History of Medicine), pp. 71-88.

botanical folk-lore, such as they may be supposed to have shared with their brethren of Gaul, has been laboriously put together, while some yet remains to be gathered from folk custom.¹ The surviving earliest writings—British, as we had best call them to avoid the ambiguous word Celtic and to distinguish them from Anglo-Saxon material,—are either a mixture of folklore, magic, romance and fable, or are of a devotional character.² Some knowledge of the medical system that had been developed by the British people may yet be gleaned from the literature of prayers and invocations and lives of saints. The *Lorica* falls into this liturgical category. It is a document that has reached us from perhaps as early as the sixth century, and may be valued not only for the insight it gives into the magic of the Christianized British people but also as displaying, as well as such material could, the character and limits of the slight anatomical knowledge that the Celtic tribes of Britain had succeeded in gathering from their Roman conquerors.

Now the early devotional literature of the Celtic speaking peoples has certain characteristics into the details of which it is not our purpose to enter,³ but it is sharply contrasted with liturgical material emanating more directly from Rome by its highly emotional character and the extraordinary love of minutely detailed invocation. The Romans were a working people whose interests were exclusively practical. This feature displays itself to the full in the Roman liturgy when compared with compositions of native British origin. The prayer here discussed is very different from the Roman type and in close accord with the surviving fragments of the Celtic hymnology. It opens with an invocation to the heavenly powers couched in a tone of unrestrained and, as we may now consider, of unbalanced emotion. After an

¹ M. Höfler, "Volksmedizinische Botanik der Kelten," *Archiv f. Gesch. d. Med.*, Leipzig, 1912, pp. 1 and 241. The investigations of Whitley Stokes ("Materia Medica of the Mediaeval Irish," *Revue Celtique*, Paris, 1888, ix, p. 224) shows that in the true mediaeval period the Celtic-speaking Irish had absorbed the Arabian medical system and that the ancient herb lore had, even at that date, ceased to be customary. See also P. Pansier, "La Médecine des Gaulois au Temps des Druides," *Janus*, Haarlem, 1907, xii, pp. 496 and 525.

² A fragment of a Celtic leech book, perhaps dating from the tenth century, was described by Stokes in vol. i of the *Archiv f. celtische Philologie*. This fragment is Celtic only in the use of a few vernacular words. In other respects it is a typical specimen of Dark Age medicine.

³ Some have thought that the basis of these characteristics was a fundamental heresy in the Celtic Church involving a confusion of the second and third persons of the Trinity bringing the Celtic Church in close relation to Gnostic and Neoplatonic views. F. C. Conybeare, "The Character of the Heresy of the Early British Church," *Trans. Hon. Soc. of Cymmrodorion*, Lond., 1898. This view is opposed by the liturgiologist, F. E. Warren, "Liturgy and Ritual of the Celtic Church," Oxford, 1881, and "Conversion of the Kelts"—"Cambridge Mediaeval History," ii, p. 498, Cambridge, 1913.

introduction of fourteen stanzas of this character the *Lorica* proceeds, in a series of thirty-three stanzas, to beseech God's aid against the assaults of demons on the body of the suppliant. In the course of this prayer, every organ of which the author could possibly think is mentioned and exorcised. The names of the members are set down in detail, and the divine guardianship is asked for each in turn. In spite of its Celtic setting the *Lorica* is a piece of pure Eastern demonism which has somehow fascinated the English speaking people and become absorbed into the Anglo-Saxon magico-medical system.

(II) THE TITLE, AUTHOR AND DATE.

The word *Lorica* meant primarily a *leather coat* or *cuirass* and was used in this sense as early as Plautus (died 184 B.C.). In later classical writings the term came to describe a hauberk or byrnie of linked mail. A *Lorica* of this kind is described by Virgil:—

Loricam consortam hamis auroque trilicem
A hauberk of linked mail and triple tissue of gold.

ÆNEID, iii, 467.

Mail coats of this kind were well known to the Celtic and Teutonic tribes. Such a mail coat is carved, together with Runic writing, on an eighth or ninth century whalebone casket in the British Museum,¹ and a *hringde byrnan* is described in *Beowulf* where we read:—

Bēowulf madelode—on him byrne scān,
Searo-net seowed smiþes or-þancum.
Bēowulf spake, the byrnie on him shone,
The armour-net linked by the skill of the smith.

BEOWULF, 405, 406.

Loricae of this type have been recovered by excavation from Teutonic sites from Switzerland to Sweden,² and it is evident that such armour was widely known in barbarian Europe.³

¹ The "Franks Casket" figured in the *Facsimiles of the New Palaeographical Society*, plate 229.

² Cp. S. R. Meyrick, *Archaeologia*, xix, p. 336; W. M. Wylie, *Archaeologia*, xlv, p. 100; Sophus Müller, *Nordische Altertumskunde*, ii, p. 128; Lehmann, *Brünne und Helm*, 1885; J. R. Clark Hall, *Beowulf*, London, 1911, p. 228.

³ G. Baldwin Brown points out, however, that coats of mail, though widely distributed, are yet rare in Teutonic graves, though from literary sources we derive the impression that such pieces of armour were common. The coat of mail, though perhaps of Roman origin, was, at times at least, of Teutonic workmanship.—"Arts and Crafts of our Teutonic Forefathers," Edin., 1910, pp. 113 and 117.

The special liturgical use of the word *lorica* is probably derived from passages in the Vulgate where St. Paul speaks of those who have "put on the lorica of righteousness," "*induti lorica[m] justitiae*" (Ephesians, vi, 14), or are "covered with the lorica of faith and love," "*induti lorica[m] fidei et caritatis* (I Thess. v, 8).¹ In connexion with the later development of the idea of a lorica of prayer, the former of these passages may be considered in its context.

*Ephesians vi.**Vulgate Version.*

10. . . . Fratres confortamini in Domino, et in potentia virtutis ejus.
11. Induite vos armaturam Dei, ut possitis stare adversus insidias diaboli.
12. Quoniam non est nobis colluctatio adversus carnem et sanguinem, sed adversus principes, et potestates, adversus mundi rectores tenebrarum harum, contra spiritualia nequitiae, in caelestibus.
13. Propterea accipite armaturam Dei, ut possitis resistere in die malo, et in omnibus perfecti stare.
14. State ergo succincti lumbos vestros in veritate, et induti lorica[m] justitiae;
15. Et calceati pedes in praeparatione Evangelii pacis;
16. In omnibus sumentes scutum fidei, in quo possitis omnia tela nequissimi ignea extinguere.
17. Et galeam salutis assumite, et gladium spiritus, quod est verbum Dei.

English Translation.

10. . . . Brethren be ye strong in the Lord and in the power of His might.
11. Put on yourselves the armour of God that ye may be able to stand against the wiles of the devil.
12. Since for us the struggle is not against flesh and blood but against principalities and powers, against the rulers of the world of this darkness, against the Church (spiritualia) of wickedness in the heavens.
13. Wherefore take up the armour of God, that ye may be able to withstand in the evil day and, being perfected in all things, to stand.
14. Stand therefore having girded your loins with truth and having put on the lorica of righteousness.
15. And having feet shod with preparation of the gospel of peace;
16. Above all taking up the shield of faith with which ye may be able to extinguish all the fiery darts of the most evil one.
17. And take the helmet of salvation, and the sword of the spirit, which is the word of God.

¹ In the original Greek the word translated lorica is *θώραξ* in both cases.

A similar range of ideas is encountered in Isaiah lix, 17, and in Psalm xci. In the former we read of one who "has put on righteousness as a lorica and a helmet of salvation on his head," *indutus est justitia ut lorica, et galea salutis in capite ejus*. It is interesting also to observe that Psalm xci is treated in Rabbinic literature as a protection against demoniac foes and against disease, and used in much the same way as the lorica that we here describe.

In early Christian Europe the devotee regarded himself as surrounded constantly by devils who were always thrusting at him and endeavouring to pierce his breast-plate of good deeds and Christian observance. It became an ecclesiastical commonplace to speak of those protected from such attacks by a life of devotion, chastity and asceticism as *loricati*. Thus the demon- and sin-repelling apparatus of prayer and mortification was conventionally looked upon as itself a lorica.

This feature is well brought out in the Irish hymn attributed to Bishop Sanctan, an early saint of Welsh origin, which begs that:—

To my soul for every black sin
Let never demons' godlessness visit me.

I shall utter the praises of Mary's son
Who fights for good deeds.
And God of the elements will reply
For MY TONGUE IS A LORICA for battle.
In beseeching God from the heavens
May my body be incessantly laborious
That I may not come to horrible hell.¹

Certain prayers regarded as of special efficacy, to which the name of some well-known and much tried saint was sometimes attached, thus came to be called *loricae*. In Ireland a special lorical value was attached to the prayers of St. Patrick; thus in an early Irish poem in praise of him we read that "a hymn which thou hast chosen in thy lifetime shall be a LORICA of protection to all."

The most famous of all the *loricae* is indeed that which claims to have been written by St. Patrick himself. Whether the claim is a just one or no, the composition is certainly very ancient and perhaps dates back to the fifth or sixth century, since it was written in a period when paganism had still considerable influence. The "Lorica of

¹ Printed and translated by J. H. Bernard and R. Atkinson, "The Irish Liber Hymnorum," Lond., 1898, i, p. 129, and ii, p. 47.

St. Patrick," the "*faeth fiada*" or "cry of the deer" as it is called,¹ betrays its early origin by the call for protection "against incantations of false prophets; against black laws of paganism . . . against deceit of idolatry and against spells of women, smiths and druids." In the first lines of this text we read how "Patrick made this hymn . . . for the protection of himself and his monks against the enemies that lay in ambush for the clerics. And it is a LORICA of faith for the protection of body and soul against demons and men and vices. When any person shall recite it daily with pious meditation on God, demons shall not dare to face him, it shall be a protection to him against all poison and envy, it shall be a guard to him against sudden death; it shall be a LORICA for his soul after his decease." The Loricæ which bears the name of Gillus or Gildas, which we here discuss, is of a somewhat similar type and designed for a like purpose to that of Patrick, which it closely resembles in tone and style.

The earliest copy of the Gildan Loricæ that can be dated with any accuracy is a Cambridge MS. of Anglo-Saxon workmanship. This MS. has been recognized on palæographical grounds as a product of the ninth century, while its date can be more narrowly determined by its acrostic containing the name *Aedelwald Episcopus*.² This Aethelwald was Bishop of Lichfield between 818 and 830. But the composition of the Loricæ is anterior to the earlier of these dates, since it is clearly Celtic in origin and character, and there could have been little direct Celtic influence on the liturgy of the English Church in the ninth century. The Welsh frontier had been flung back across the Severn fifty miles and more from the seat of his bishopric well nigh two centuries before Aethelwald occupied it, so that by the eighth century Mercia was politically cut off from Wales.³ To separative political elements must be added the odium resulting from the schismatic character of the British Church after the Council of Whitby (664), reflected even in the writings of so gentle a soul as Bede (672-735). Thus to explain the Celtic source of the Loricæ and to reach a point when a Mercian would

¹ Bernard and Atkinson, *loc. cit.*, i, p. 133, and ii, p. 49. The interpretation of the term *faeth fiada* is disputed. Some would read it *feth fiada* and consider that it was a spell peculiar to Druids and poets who by pronouncing certain verses of the hymn could make themselves invisible. The point is one that only Celtic scholars can decide. See Hugh Williams' "Gildas de excidio Britanniae," *Hon. Soc. of Cymmrodorion*, 2 vols., Lond., 1899, ii, p. 292.

² The entire document is printed by A. B. Kuypers, "The Book of Cerne," Cambridge, 1902.

³ It is, however, probably incorrect to suppose that the so-called "Offa's Dyke" was a work of this period.

have adopted a prayer of British origin, we must certainly look further back than the days of Aethelwald, and at least to the seventh century.

There is, moreover, external literary evidence that the composition of the Lorica was anterior to the eighth century. Aldhelm of Malmesbury (died 709) appears to have known of it, and his peculiar expression *tuta pelta protegente* is, it has been suggested, a reminiscence of stanza 16.¹ Further, all the MSS., except that at Vienna, associate the Lorica with one Laidcend, Loding or Lodgen. The *Leabhar Breac* or *Speckled Book*, a work of the fourteenth century, speaks of the prayer as introduced into Ireland by *Laidcend, son of Baeth the Victorious*. This Laidcend, according to the Irish annals, died in 661, and if the Laidcend of the *Leabhar Breac* is the same as Lodgen or Loding the prayer must be earlier than this date.

The opening sentence of the *Leabhar Breac* runs *Gillus hanc lorica fecit ad demones expellendos eos qui arduersauerunt illi*. It has been suggested that this Gillus is identical with Gildas the "British Jeremiah." Gildas Badonicus, the earliest British historian, was born in 516, the year of the battle of Mount Badon, and died about 570. Gillus or Gillas is known to be a common form of Gildas, especially in Irish documents.² His well-known history, *De exidio Britanniae* was written about 560, and a date about the middle of the sixth century must be ascribed to the Lorica if it is from his hand. The evidence of the Gildan origin of the work is however by no means conclusive, though it was most probably composed in the century in which Gildas lived, to which period other specimens of Hibernian Latin have been attributed,³ though it is probable that most of them are at least a century later. If Gildas were really the author we could regard the *mortalitas huius anni*, referred to in the text as the *yellow plague*, which is said to have ravaged Britain about 547, at which date the composition of the Lorica would then be approximately fixed.⁴

¹ F. J. H. Jenkinson, "The Hisperica Famina," Cambridge, 1908, p. xxii.

² For instances of this see H. Williams' "Gildae de exidio Britanniae, fragmenta, liber de paenitentia, accedit et lorica Gildae," *Hon. Soc. of Cymmrodorion*, 2 vols., Lond., 1899 and 1901, ii, p. 289.

³ The view that the Lorica is of the sixth century, and the work of Gildas, is upheld by H. Zimmer, "Nennius Vindicatus," Berl., 1893. It is regarded as of the seventh century (circ. 660) by R. Thurneysen in *Zeit. f. deutsche Philologie*, xxviii, p. 111, and by Hugh Williams, *Gildas*, Lond., 1889-1901, p. 295, and "Christianity in Early Britain," Oxford, 1912. There is general consent that it is not later than the seventh century.

⁴ The dates of this plague lie between 543 and 548. The occurrence of this plague is doubted by C. Creighton, "A History of Epidemics in Britain," Cambridge, 1912, 2 vols., i, p. 4. It is thought that the story may have arisen as a rumour of the great plague at Byzantium and elsewhere in 543 and subsequent years. Cp. O'Donovan, "Annals of the Four Masters," Dublin, 1851, i, p. 183.

Before we discuss the language of the *Lorica* we may remind the reader of some of the contemporary political and literary events in the midst or, rather, at the periphery of which, the conjectural date of 547 would place our text. Augustine of Hippo had been dead for over a hundred years, and no mission had yet gone forth from Rome to the English, for Gregory the Great was yet a child and the chair of Peter was occupied by the vacillating weakling Virgilius. Within the Empire the reign of prosperity of Theodoric the Ostrogoth was over and disorder had broken out. In 547, the alleged date of the *Lorica*, Rome, having been besieged by the Goths, had been recaptured by Belisarius, only to fall again into the hands of the northern hordes two years later. In the literary world the *Lorica* is intermediate in time between the swan-song of the Platonic philosophy, the last utterance of the spirit of the classics, that came from the lips of Boethius (480-524) in his prison in Pavia, and the first works bearing the authentic stamp of mediaevalism flowing from the pen of Cassiodorus (490-585) in his years of learned and verbose retirement at the other end of Italy at Calabrian Squillace.

(III) LANGUAGE.

The language of the *Lorica* of Gildas has attracted a great deal of attention. The difficulty presented by mediaeval Latin is usually in the vocabulary, and is seldom constructional. To this rule the *Lorica* is no exception, for, with a very simple structure, it presents a most extraordinary collection of out-of-the-way and exotic words. The Latinity has been much studied in connexion with the *Hisperica Famina*, a curious document of the seventh century in the Vienna Library, which the *Lorica* in many ways resembles.¹

A similar specimen of the so-called Hibernian or Hisperic Latin is encountered in a hymn attributed to St. Columba (died 597), known from its opening words as *Altus prosator*.² This composition

¹ The text of "The *Hisperica Famina*" is easily accessible in Migne's *Patrologia Latina*, xc, p. 1186. Important discussions containing the bibliography of the text will be found in H. Bradshaw, "Collected Papers," Camb., 1889, p. 453 (reprinted from a publication of 1872), and by H. Zimmer, *Nennius Vindictus, Über Entstehung, Geschichte und Quellen der Historia Brittonum*, Berl., 1893, H. Zimmer in the *Nachrichten von d. Königl. Ges. der Wissenschaften zu Göttingen*, 1895, Heft. 2. Another curious specimen containing many of the "Hisperic" words of the *Lorica* is encountered in the *Luxemburg folio* transcribed by J. Rhys, *Revue celtique*, i, p. 346, Par., 1871. An excellent review of Hisperic or Hibernian Latin texts is given by H. Williams, loc. cit., p. 298 ff. Lastly, the text of the *Hisperica Famina* has been critically edited and compared with other specimens of Hibernian Latin by F. J. H. Jenkinson, *The Hisperica Famina*, Camb., 1908.

² Reprinted by Bernard and Atkinson, loc. cit., i, p. 62; ii, pp. 23 and 140.

is known only in two late eleventh or early twelfth and one fourteenth century MS., but there can be no doubt that it is far more ancient than the eleventh century. The *Altus prosator* also, we are assured, renders the reciter thereof secure from all manner of spiritual destruction, and further "protects against every death save death on the pillow."

Another early fragment of Celtic origin, the Leyden Lorica, enumerates the parts of the body in great detail, in the same way as does the Lorica of Gildas, and uses much of the same obscure vocabulary. The Leyden Lorica is, on the whole, however, much simpler and less interesting than is the Gildan document.¹

Modern research tends more and more to show that the earlier stages of the process by which the Anglo-Saxon replaced the British tribes was one of infiltration and penetration rather than of invasion conquest and extermination, although doubtless both elements were present. On this view we should expect to find connecting links between the Anglo-Saxon and the Celtic languages, yet such links are extraordinarily difficult to trace, and the classical Anglo-Saxon tongue—early literary English—contains no more Celtic words than does modern English. Such Celtic rests as are to be discovered in Anglo-Saxon documents must be sought either in Hisperic texts or in magical formulæ. To find any real connexion or fusion between the two languages, if any such ever existed, we should probably need to look much further back than the formed literary English of which the best examples are of the tenth century, beyond the Danish devastation of the ninth century, beyond the racial bitterness of the eighth, beyond the schism of the seventh century, perhaps even beyond the Roman missionary effort of the sixth century under Augustine of Canterbury.

Now although the race and language movement was always westward, yet the cultural advantage for centuries was on the side of the receding peoples. The Celtic and English idioms are so vastly different that then, as now, little mixture of the two can have taken place, but there was a cultural diffusion in an eastward direction which is traceable in written documents. Celtic magic and folklore spread among men of English speech, carrying its characteristic ideas with it. Of this influence the Leechdoms give evidence in many places. To the Anglo-Saxon clerics, who shared a knowledge of Latin with their Celtic colleagues, there was an easy means of communication, and of this interchange the Lorica of Gildas is an early, perhaps the earliest,

¹ V. H. Friedel, "La Lorica de Leyde," in the *Zeit. f. celtische Philologie*, 1898, ii, p. 64.

monument. It is written in that very peculiar form of Latin known as Hisperic or Hibernian that was affected in south-west Britain and Ireland in the sixth and seventh centuries. Considerable remnants of what must have been an extensive Hisperic literature have now been recovered.¹ In this surviving Hisperic literature the *Lorica* of Gildas stands almost alone in that, while thoroughly Celtic in tone and style, and in use moreover by both the Irish and Welsh, it was yet popular with the English. This curious fact is sufficiently proved by the existence of three copies of the *Lorica* of Anglo-Saxon workmanship, two of them fully glossed in the Anglo-Saxon language. The *Gildan Lorica* is thus perhaps the earliest surviving literary link between the two rival cultures and rival tongues.

That the *Lorica* of Gildas was not the only specimen of Hibernian Latin that had reached the Saxon monasteries we learn from the occurrence of many of its difficult words in Anglo-Saxon vocabularies from the eighth to the eleventh centuries, and occasionally in the writings of Aldhelm (died 709). Through the medium of these glosses and vocabularies the combined efforts of mediaevalists, and Greek, Semitic, Celtic and Anglo-Saxon scholars have now extracted the meaning and source of nearly all the obscure terms. There are also several passages in the *Leechdoms* which must have been written under Hisperic influence.²

It is not easy to understand how a knowledge of Hebrew sufficient to suggest to its author some of the out-of-the-way words here included can have reached Britain in the sixth or seventh century, nor is any help obtainable from the extant work of Gildas. It should be noted, however, that the *Book of Kells*, which is assigned by some of the best critics to the seventh century,³ contains on its first leaf a number of Hebrew words with their Latin equivalents.⁴ It must be admitted that

¹ A readable account of the literature of Hibernian Latin is contained in the article on the Celtic Church, by H. Zimmer, in the *Realencyclopädie f. prot. Theologie und Kunst*, and has been conveniently translated into English by A. Meyer as "The Celtic Church in Britain and Ireland," Lond., 1902.

² These are to be found in vol. i, p. 386 and pp. 388-390; vol. ii, p. 112 and pp. 348-350; vol. iii, p. 26, p. 78, pp. 288-290, and p. 294 of O. Cockayne's "Leechdoms, Wortcunning and Starcraft of Early England," 3 vols., Lond., 1864-66.

³ Cp. Johan Adolf Bruun, "An Enquiry into the Art of the Illuminated Manuscripts of the Middle Ages, Part I, Celtic Illuminated Manuscripts," Edin., 1897, and Edward Sullivan, "The Book of Kells," Lond., 1914.

⁴ A Gallician psalter with Hebrew equivalents dating from the tenth century has also been described, F. E. Warren, "Un Monument inédit de la Liturgie Celtique," Par., 1888, *Revue Celtique*, ix, p. 88. It may have been from some source such as this that Bede derived his slight knowledge of Hebrew. A Hebrew alphabet and the equivalents and meanings of the letters is attached to a tenth century MS. of Rabanus Maurus at Exeter Cathedral.

more modern study of the Hisperic Latin literature has reduced the number of words to which a Semitic source was ascribed by the earlier investigators. There still remains, however, a small group which appear to be indeed of Semitic origin, and cannot be otherwise explained. Prominent among these are *iduma* = יָדָא = hands; *gibrae* = גִּבְרָא = man; and *senas* = שֵׁן = tooth. While the source of such words cannot yet be fully explained, there are certain points in connexion with this peculiar Semitic relationship that may be borne in mind.

(a) From an early date interest in the works of Jerome attracted attention to the words of Hebrew origin used by him, and information as to the meaning of these and, perhaps, of other Hebrew words thus reached these shores. Two very early vocabularies of Anglo-Saxon origin contain a considerable proportion of Hebrew words.¹ Bede seems to have had a vestigial knowledge of Hebrew.

(b) It is possible that writers of Hibernian Latin may have had direct access to Jewish sources. No evidence is, however, forthcoming that there were Jews in England before the Conquest, though there are ample records of their presence in Gaul.²

(c) Recent research has demonstrated unexpectedly early Arabian influence in southern Gaul beginning not later than the early part of the eighth century.³

(d) Syriac influence has been traced also in the Lorician vocabulary. It seems clear that from an early date Syrian wanderers, travelling perhaps for trade purpose, had reached the West. Thus a Spanish work on Alchemy of about the year 700 contains many Syriac terms. Again, Gregory of Tours (538-594) who was contemporary with the supposed date of our *Lorica*, tells that he learned the story of the Seven Sleepers of Ephesus from the mouth of a Syrian.⁴ The same writer preserves also the Syrian legend of Cosmas and Damian.⁵ Syrian influence in

¹ J. H. Hessel's "An Eighth Century Latin-Anglo-Saxon Glossary" (*The Corpus Glossary*), Cambridge, 1890, p. 3; and "A Late Eighth Century Latin-Anglo-Saxon Glossary (*The Leyden Glossary*)", Cambridge, 1906, pp. 27 and 221.

² S. A. Hirsch, *Trans. Jewish Historical Soc. Eng.*, Lond., 1915, vii, pp. 3 and 4.

³ Leo Wiener, "History of the Arabico-Gothic Culture," New York, 2 vols., 1917. The conclusions in this work are generally unsound, but the important chapter on Virgilius Maro contains valuable material that has been commented on by H. Bradley in the *Eng. Historical Rev.*, Lond., 1918, xxxiii, p. 252.

⁴ Gregory of Tours, *De gloria martyrum*, Ch. xcv.

⁵ Charles and Dorothea Singer, "Miniature of an Operation of Cosmas and Damia" attributed to Mantegna," *Osler Presentation Volume*, New York, 1919.

art was also prominent about 781 in Carolingian times, as we learn from the Godescalc Gospels written for Charlemagne.¹

The knowledge of Greek, on the other hand, which the *Lorica* displays in common with other specimens of Hisperic Latin was no very unusual accomplishment in Ireland from a date placed by some scholars as far back as the fifth century.² Throughout the Dark Ages Ireland was the chief, if not the only, centre of Greek study in north-western Europe.³ This knowledge may have reached the island from Southern Gaul, where, as we know from Apollinaris Sidonius (430-487) Greek was well-known in the fifth century. The special magic value attached to the *Lorica* of Gildas alike by the Celtic and English speaking peoples, arose perhaps from this mysterious and exotic character of its phraseology.

(IV) MANUSCRIPTS.

The *Lorica* of Gildas is known from the following six manuscripts:—

(A) *Early Ninth Century*.—Cambridge University Library Ll.I. 10, fo. 43. This MS. is known as the *Book of Cerne*, but is better described as the *Prayer Book of Aedeluald the Bishop*. The section containing the *Lorica* is fully glossed in the Kentish dialect of Anglo-Saxon by a hand that is probably of the *tenth century*. These glosses are valuable as giving the meaning of many words which would be otherwise untranslatable. The latest edition of it is contained in Dom. A. B. Kuypers O.S.B. *The Book of Cerne, Cambridge*, 1902, p. 85. The drawings and illuminations of this volume are discussed by J. O. Westwood in his *Facsimiles of the Miniatures and Ornaments of Anglo-Saxon and Irish MSS.* London, 1868, p. 43. The text is also printed and elaborately compared with the other MSS. and discussed by R. P. Wülker, *Bibliothek der Angelsächsischen Prosa*, Bd. vi, Hamburg, 1905. See also H. Sweet, *The Oldest English Texts*, "Early English Text Society," London, 1885.

¹ A Michel, *Histoire de l'Art*, Par., 1905, p. 336; J. A. Herbert, *Illuminated Manuscripts*, Lond., 1911, p. 99.

² Among them so eminent an authority as Ludwig Traube. See L. Traube, "O Roma nobilis. Philologische Untersuchungen aus den Mittelalter," Munich, 1891. See also K. Meyer, "Learning in Ireland in the Fifth Century and the Transmission of Letters," Dublin, 1913.

³ A popular account of the part played by Irishmen in the spread of learning during the Middle Ages is given in "The Irish Element in Mediaeval Culture," by H. Zimmer, translated by J. E. Edmunds, New York, 1891.

(B) *Eighth or Ninth Century*.—British Museum Library, Harley, 2965. A manuscript formerly belonging to St. Mary's Abbey or Nunnaminster at Winchester. The text is printed by W. de Gray Birch, in *An Ancient Manuscript of the Eighth or Ninth Century*, published by the Hampshire Record Society, Winchester and London, 1889. We have in the main reproduced this text. See also *New Palæographical Society Facsimiles*, plate 163.

(C) *Ninth Century*.—Cologne Cathedral Library, formerly at Darmstadt, where it was numbered 2106. It has been copied from a glossed original and has several corrections in a later hand. The text is printed by Mone in *Lateinische Hymnen*, Freiburg, 1853, vol. i, p. 367.

(D) *Late Tenth Century*.—British Museum Library, Harley, 585, fo. 152. The Lorica is here placed in the midst of an Anglo-Saxon medical receipt book known as the "Lacnunga" (i.e., Medications, recipes), and is fully glossed by an Anglo-Saxon hand of the eleventh century. This version has been printed by O. Cockayne, *Leechdoms, Wortcunning and Starcraft of Early England*, London, 1864, vol. i, p. 73.

(E) *Fourteenth Century*.—Royal Irish Academy at Dublin, the *Leabhar Breac* or *Speckled Book*. This MS. is an immense collection of ecclesiastical pieces, and has been published in facsimile by the Royal Irish Academy, Dublin, 1876. The text of the Lorica is glossed in Irish, and text and glosses are printed and discussed by Whitley Stokes, *Irish Glosses*, Dublin, 1860, p. 133. It has been printed again by Bernard and Atkinson in the *Irish Liber Hymnorum*.

(F) *Sixteenth Century*.—Vienna Royal Library, 11, 857. This text has been printed by Daniel in the *Thesaurus Hymnologicus*, 1855, vol. iv, p. 364.

(V) TEXT AND TRANSLATION.

We have in general followed the text of B as being probably the most ancient. Where we have diverged from B we have indicated the fact in a foot-note.

Gillus hanc lorica[m] fecit ad
demon[es] expellendos, eos qui aduersa-
uerunt illi.

Peruenit angelus ad illum, et dixit
illi angelus: Si quis homo frequen-
tauerit illam addetur ei seculum septim
annis et tertia pars peccatorum

Gildas made this lorica to drive
out those demons who pestered him.

An angel came to him, and the
angel said to him "If any man should
recite it constantly, a period of seven
years would be added to his life and
a third part of his sins blotted out.

delebitur. In quacumque die cantauerit hanc orationem . . . es, homines uel demones, et inimici non possunt nocere; et mors in illo die non tengit. Laidcend mac Búith Bannaig uenit ab eo in insulam Hiberniam; transtulit et portauit super altare sancti Patricii episcopi, saluos nos facere, amen.

Metrum undecassillabum quod et bracicatelecticon dicitur, quod undecem sillabis constant; sic scanditur.¹

1. Suffragare trinitatis² unitas
unitatis miserere trinitas
2. Suffragare quaeso mihi posito
maris magni uelut in periculo
3. Ut non secum trahat me mortalitas
huius anni neque mundi uanitas
4. Et hoc idem peto a sublimibus
celestis militiae uirtutibus
5. Ne me linquant lacerandum
hostibus
sed defendant me iam armis
fortibus
6. Ut me illi praecedant in acie
caelestis exercitus militiae
7. Cherubinn et seraphinn cum
milibus
Michael et Gabrihel similibus
8. Opto tronos uirtutes³ archangelos
principatus potestates angelos
9. Ut me denso defendentes agmine
inimicos ualeam prosternere

On whatsoever day he should chant this prayer . . . men, demons or enemies cannot harm him, nor death touch him on that day." Laidcend, son of Baeth the Victorious, came from him to the island of Ireland; he brought it over and placed it upon the altar of Saint Patrick the Bishop, to make us whole. Amen.

The metre is hendecasyllabic and is also called brachycatalectic because it consists of eleven syllables. It is scanned thus:—

Help O oneness of Trinity
have pity O threeness of unity,
I beseech thee to help me who am
placed
in peril as of a mighty sea,
So that neither the pestilence of this
year
nor the vanity of the world may suck
me under.
And this I beg from the might
of the powers of the high heavens;
that they may not leave me to be
torn by foes,
but may defend me with their
mighty arms;
that they may stand before me in
battle array
as the army of heaven's levy.
Cherubim and Seraphim with their
thousands
Michael and Gabriel and their like,
I conjure the thrones, the virtues, the
archangels,
the principalities, powers and angels
that, shielding me in dense formation,
I may stand strong to strike down
the enemy

¹ This introduction is inserted from E; B has Hanc luricam lodgen in anno periculoso constituit. Et alii dicunt magna sit uirtus eius. Si ter in die cantatur. A has only Hanc luricam loding cantauit ter in omne die.

² B reads trinitas. Our reading is inserted from E.

³ A reads inuentes. B reads uiuentes. Uirtutes is inserted from E.

10. Tum deinde ceteros agonithetas
patriarchas quattuor quater pro-
phetas
11. Et apostolos nauis Christi pro-
retas
et martyres omnes peto anthletas
12. Atque adiuro et uirgines omnes
uiduas fideles et confessores¹
13. Ut me per illos salus sepiat

- atque omne malum a me pereat
14. Christus mecum pactum firmum
fereat
timor tremor tetras turbas terreat.

Finit primus prologus graduum
angelorum et patriarchum
apostolorum et martirum cum
Christo.

Incipit prologus secundus de
eunctis membris corporis usque
ad genua.²

15. Deus inpenetrabili tutella
undique me defende potentia
16. Meae gibrae pernas omnes libera
tuta³ pelta protegente singula
17. Ut non tetri demones in latera
mea librent ut soleant iacula
18. Gigram cephalæ cum iaris et conas
pattham ligamam sennas atque
michinas
19. Cladum crassum madianum talios
bathma exugiam atque binas
idumas
20. Meo ergo cum capillis uertice⁴
galea salutis esto capite
21. Fronti oculis et cerebro triformi
rostrum labie facie timpore
22. Mento barbae superciliis auribus
genis buccis internaso naribus

(I beg) then the other chieftains,
the patriarchs and the four times four
prophets
and I beg the Apostles, the pilots of
the ship of Christ,
the martyrs, yea, all of them captains,
and I adjure also all virgins,
faithful widows and confessors,
that for their sake salvation may
circle me
and all evil may perish from before me,
that Christ may make a strong
alliance with me
that terror and fear may affright the
foul host.

Here ends the first prologue of the
degrees of angels and patriarchs, of
apostles and martyrs with Christ.

Here begins the second prologue
concerning all the members of the
body as far as the knees.

O God with thy inscrutable
saving power defend all my parts
deliver the whole trunk of my body
with thine own protecting shield
that foul demons may not hurl,
as is their wont, their darts at my
flanks,
skull, head with hair and eyes,
forehead, tongue, teeth and nose,

neck, breast, side and reins
thighs, bladder and two hands.

To my head, with hairs on top of it,
be a helmet of protection,
to forehead, eyes and triformed brain,
to nose, lip, face and temple
to chin, beard, eyebrows, ears,
cheeks, lips, internasal septum and
nares,

¹ The whole of stanza 12 is omitted by A and B but found in E.

² The two clauses between stanzas 14 and 15 are omitted by A and B and inserted from E.

³ A and E read *tuta*, B *tua*.

⁴ A reads *capiti*, as also E.

23. Pupillis rotis palpebris tautonibus
gingis anile¹ maxillis faucibus
24. Dentibus linguae ori uuae² guttori
gurgulioni et sublinguae ceruici
25. Capitali ceotro cartilagini
collo clemens adesto tutamini
[Obsecro te domine Iesu Christe
propter nouem ordines
sanctorum angelorum.³]
26. Deinde esto LORICA tutissima
ergo membra ergo mea uiscera⁴
27. Ut retrudas a me inuisibiles
sudum clauos quos fingunt odibiles
28. Tege ergo Deus fortis lurica
cum scapulis humeros et brachia
29. Tege ulnas cum cubis et manibus
pugnus palmas digitos cum ungibus
30. Tege spinam atque costas cum
arctibus
terga dorsumque neruos cum
ossibus
31. Tege cutem sanguinem cum renibus
cata crines nates cum femoribus.
32. Tege cambas surras femoralia
cum genuclis po(p)lites et genua
33. Tege ramos con crescentes decies
cum mentagris ungues⁵ binos
quinquies
34. Tege talos cum tibiis et calcibus
crura pedes plantarum cum bassibus.
35. Tege pectus iugulam pectusculum
mamillas⁶ stomachum et umbilicum
- to the round pupils, eyelids and eye-
lashes,
gums, breath, jaws, fauces,
to the teeth, tongue, mouth and throat,
uvula, larynx and frenum of the tongue,
to head-pan, brain and gristle,
and to my neck be thou a protection
in thy mercy ;
[I beseech thee, O Lord Jesus Christ
for the nine orders of holy angels,]
Be thou a secure Lorica
both to my members and to my viscera.
So that thou turn back from me
the invisible
points of the shafts which transfix
the abhorred.
Cover (me) then, O God, Thou strong
lorica
as to my shoulders, arms and fore-
arms ;
Cover arms with elbows and hands
fists, palms, fingers with nails.
Cover the spine and ribs with their
joints,
the rear and back with nerves and
bones.
Cover skin, blood with kidneys
haunches and rump with thighs.
Cover hams, calves and thigh parts
with knee caps, poplites and knees
Cover the tenfold branches (of the
fingers)
with toes and their twice five nails.
Cover ankles with shanks and heels
legs, feet, soles with insteps.
Cover breast, peritoneum and breast
bone,
mammas, stomach and navel.

¹ B reads Anale. The reading anile is inserted from A.² B reads ubae only. The reading ori uuae is inserted from A.³ This invocation is absent in A and B and is inserted from E.⁴ The order of Membra and uiscera is inverted in B.⁵ B has iunges. The reading ungues is from A.⁶ B has mamellum. The reading mamillas is from A and E.

- | | |
|--|---|
| <p>36. Tege uentrem lumbos genetalia
et aluum et cordis uitalia</p> <p>37. Tege trifidum iecor et ilia
marsem reniculos fithrem cum
obligio.</p> <p>38. Tege toliam toracem cum pulmone
uenas fibras fel cum bucliamini</p> <p>39. Tege carnem inginem¹ cum medullis
splenem cum tortuosis intestinis</p> <p>40. Tege uesicam adipem et pantes² •
compaginum innumeros ordines</p> <p>41. Tege pilos atque membra reliqua
quorum forte praeteribi nomina</p> <p>42. Tege totum me cum quinque
sensibus
et cum decim fabrefactis foribus</p> <p>43. Ut a plantis usque ad verticem

nullo membro foris intus egrotem</p> <p>44. Ne de meo possit uitam trudere

pestis febris languor dolor corpore</p> <p>45. Donec iam Deo dante seneam

et peccata mea bonis deleam</p> <p>46. Et de carne iens imis caream

et ad alta euolare ualeam</p> <p>47. Et miserto³ Deo ad etheria
laetus regni uechar refrigeria
Amen. Amen.</p> | <p>Cover belly, groins, genital parts
and paunch and vital parts of the
heart.</p> <p>Cover the trifid liver and ilia,
scrotum, kidneys, intestines and rete
mirabile.</p> <p>Cover tonsils, thorax with lung,
vessels, sinews, gall with pericardium</p> <p>Cover flesh, groin with marrow,
spleen with tortuous intestines</p> <p>Cover bladder fat and all
the innumerable sorts of structures.</p> <p>Cover hairs and the other members
of which the remaining names are
numerous.</p> <p>Cover all of me with my five senses

and with the ten doors that were
contrived (for their use,
that from the soles to the top of the
head
in no member, without or within, may
I be sick ;
that there may not thrust the life
from my body
neither pest nor fever nor languor nor
pain,
while by God's grace I may reach
old age
and may wipe out my sins with good
deeds,
And leaving the flesh I may be
blameless
and may be worthy to pass on high
And by God's pity I may rise happy
to the refreshing ether of His kingdom.
Amen. Amen.</p> |
|--|---|

¹ B has iunginam, as also A. The reading inginem is from E.

² B has partes. The reading pantes is from A and E.

³ B has misero. The reading miserto is from A and E.

(VI)—OBSCURE AND DIFFICULT WORDS.

The references are given below under the numbers of the stanzas. The capital letters refer to the MSS. enumerated in Section IV. We have relied largely on the renderings of W. de Gray Birch and Cockayne, loc. cit.

Stanza 10. *Agonithetas* from ἀγωνιστής = *combatant*. A has the A.S. gloss *cempan* = *chieftains*. E contains a long gloss on this word which yields the same result as A.

Stanza 11. *Proretas* must be for προράτας = *look out men*. A is glossed A.S. *stioran* from *steorra* = *a star*. *Steor-redra* = *steersman* occurs in the Blickling homilies (late tenth century): Crist was on ðæm scipe swa se steorreþra = *Christ was in the ship as a steersman*. E has a long gloss on the word deriving it from Latin *prora* = the helm.

Anthletas for ἀθλητάς = *champions*. A is glossed A.S. *cempan* = *chieftains*. E *principes belli*.

Stanza 16. *Gibrae*, suggested origin is גבר = *man, homo*. A glosses A.S. *lichoman*. *Lic* and *lichama* are recognized A.S. forms for *body* or *corpse*, cp. German *leichnam*. E glosses, *id est hominis, gibre*.

Pernas appears to be equivalent to *flank* or *trunk*; as such it appears in an eighth century A.S. glossary thus: *perna, flicci* = *flich*.¹

E glosses *id est artus id est compur inchleib* = *trunk (?) of the chest*, according to Stokes.

Pelta probably for πέλητη = *shield*. E glosses *sciath* = *shield*.

Stanza 17. *Tetri* for *tætri*.

Stanza 18. *Gigram* is glossed by A as A.S. *hnoll* = *crown of the head*, and by E with Irish words of the same significance. The origin of the word *gigram* is unknown. Cockayne's suggestion is גִּיגֵר, *neck* (rather גִּיגֵרִית). *Gigram* might also be fancifully rendered *high top* (גִּיגֵרִית).

Cephale for κεφάλην = *head*.

Iaris, W. Wright suggests this word is from יָרֵשׁ = *hair* as by error for *Siaris*. The connexion seems distant, but E glosses *capillis*.

Conas, Cockayne's suggestion for עֵינַי = *eyes* giving the full guttural sound to the נ seems very strained. That *conas* means *eyes* seems clear from the fact that E is glossed *oculos* and D *egan* = *eyes*. *Conas* is glossed *oculos* in another tenth century MS. (Wright, vol. I).

Pattham is shown by Irish gloss of E to mean *forehead*. For a source of the word the commentators are driven to Syriac. A glosses *onwite* = *face*.

¹ Thomas Wright, *Anglo-Saxon and Old English Vocabularies*, edited by R. P. Wülker, 2 vols., London, 1884, I, 38, 34.

Liganam is glossed by E dontengaid = *to the tongue*. The word must therefore stand for *linguam*.

Sennas is glossed by A toed = *teeth*, and by E dentes. Cockayne suggests from 𐌿 = *tooth*.

Michinas is glossed by A as næsdyrel = *nostrils*. A connexion has been suggested with μυκτῆρας = *nostrils*. E glosses with the Irish equivalent of *teeth*.

Stanza 19. *Cladum* glossed by A as swiran and swioran = *sweoro, neck or column*. E glosses collum. For a source W. Wright is again driven to Syriac or Arabic; Arabic kadhalun, Syriac kedala; D reads chaladum.

Crassum glossed by A breost and by E pectus. There can therefore be little doubt of its meaning, though no likely suggestion has been made for its source. Crasum is glossed dorsum in a tenth century MS. (Wright.)

Madianum glossed by A sidan = *side* and by E latus.

Talias glossed by A lendana = lendenu = *loins, reins*, and by E with the Irish equivalent of *bowels*.

Bathma glossed by A deooh = *thews or thighs*, and by E with the Irish equivalent of *loins*. Bathma is perhaps from βαθμοί = *steps*, a word which there is evidence from Hesychius Lexicographus (probably fifth century) was used as an out of the way term for *thighs* as βαθμοί ἰχθυή πόντες = *thighs, legs, feet*.

Exugiam glossed meaninglessly by A midirnan and by D micgernu. Miece is the usual A.S. for *urine* and micgernu the *place of the urine*, i.e., *the bladder*. To regard it as equal to kidneys, as some have done, is to attribute to the author of the Lorica a physiological conception that he probably did not possess. For him it is probable that the kidneys would have been the seat of some mental rather than urinary function.

Idumas glossed by A hondas = *hands*, and by E manus. The word itself is probably from 𐌹𐌶𐌰 = *hands*.

Stanza 21. *Tempus* is the usual mediaeval form of tempus.

Stanza 23. *Tautonibus* glossed by A ofer bruum = *upper brows = eyebrows*, and by E with the Irish equivalent of *eyelids*, the eyebrows being considered the guardians (tutores) of the eyes; or perhaps the bony orbit of the skull is meant, cp. Aelfric vocabulary Tauco (? for Tauto), hringban ðæs eagen = *ring-bone of the eye*.

Gingis glossed by A toðreomum = *tooth-holder*. D reads ignis but gives the same gloss. The word is probably for gingivis and not a form of A.S. cin = *chin*.

Anile glossed by A orōðe = *breath = anhelae*.

Stanza 24. *Uuae* glossed by A *hræctungan* = *throat tongue* = *uvula*.

Gurgulioni glossed by A *ġrotbollan* = *throat pan* = *Adam's apple* = *larynx*.
E agrees with this.

Sublinguae glossed by A *tungedrum* = *tongue thread* or *tongue cord* = *under tongue cord*. D has *undertungedrum*. The meaning is surely the *frenulum linguae* of anatomists.

Stanza 25. *Capitali* glossed by A *haefudponnan* = *head pan*; by D *heafodlocan* = *head guard, head cover*.

Ceotro: A reads *centro* and glosses *swiran* = *neck*. D reads *ceotro*; E reads *ceotro* and glosses with Irish equivalent of *neck*. Cockayne suggests from *χόνδρος*, but an eighth century gloss reads *ceruellum*, *id est centrum brægen* = *brain*, and this may well be the meaning.

Cartilagini glossed by A *gristlan*.

Stanza 27. *Sudum* for *sodium*.

Stanza 29. *Cubis* glossed by A *fæðmum* = *elbow, arms*; by D *elnbogan* = *elbows*.

Pugnos glossed *fyste* = *fist* by both A and D.

Ungibus glossed *næglum* = *nails* by both A and D.

Stanza 30. *Arctibus* glossed by A *lioðum*, by D *lid* = *joints*.

Stanza 31. *Cata crines* is glossed by A *huppbaan* = *hip*. The source of the term *cata crines* is obscure and any derivation from *κατακρίνω* = *deliver judgment*, seems very difficult, though there was a school of mediaeval thinkers who made the loins the seat of judgment. Williams (loc. cit.) thinks that *cata* may be the Greek *κατά*, which was commonly used in the Latin of the sixth century as equivalent to *ad* or *juxta*.

Stanza 32. *Cambas*. E reads *gambas*; A reads *cambas*, and is glossed *homme* = *hams*.

Genuclis, glossed by A *cniehūm* = *knees*, written above an older and erased gloss that was perhaps *hweorfbānum*, a word which would bear the meaning *joint bones*.

Stanza 33. *Ramos con crescentes decies* = *the ten growing branches*, i.e., the fingers. Cp. Hesiod. Works and days: 742 ἀπὸ πεντόξοιο αὐτὸν ἀπὸ χλωροῦ τάμνειν = *to cut the withered from the quick from the five-branched* = *to cut the nails of the hand*.

Mentagris, glossed by A *tanum* = *toes*. No source for the word can be suggested. An eighth century glossary, printed by T. Wright, gives *mentagra*, *bituihn*, which helps no further.

Stanza 34. *Bassibus* from *βάσις* = *step* glossed by A *stæpum* = *steps*.

Stanza 35. *Iugulam*. Bosworth and Toller (A.S. dictionary, Oxford, 1898) suggest that *jugulam* = *collar bone*, but the word is glossed by A *dearmgewind*, which must mean *abdominal cavity* or *peritoneum* from *þearm* = *intestine*, *ðearmgewind* being thus *the parts that enwrap the intestine*.

Pectusculum is glossed by A *briostban* = *breastbone*. E gives an Irish gloss equivalent to *the breast of the palm*.

Stanza 37. *Marsem* perhaps for *marsupium* = *pouch*. The word is glossed by A *bursan* = *purse*; by E *selg* = *spleen*.

Fithrem is glossed by D *snædelðearm* = *intestine*.

Obligio is glossed by A *nettan* = *net*, the usual mediaeval term for the *rete mirabile* to which especial importance was attached by Galen and all mediaeval writers. E has an Irish gloss, *inglais*, to which no meaning can be attached.

Stanza 38. *Toliam* glossed by A *readan*. In Wright's vocabulary there is a gloss; *reada tolia vel porunula* (I, 4446-48.) *Reada* = *red*, and Dr. Henry Bradley suggests that *toliam* may represent the Middle English *tuly* or *tewly* = *purple*, a word which may possibly be derived from תְּכֵלֶת or from תִּילָע and תִּירְעָת = *worm* and also *scarlet*, i.e., the colour obtained from the worm of the shell-fish *murex*. Thus *tuly* and *toliam* may be the red worm-like structure, the *uvula*.

Fibras glossed by A and D *smæl* = *small*. E gives Irish gloss = *sineus*. *Smæl* perhaps refers to the *small ends* of the muscles.

Bucliamini glossed by A and D *heorthoman*, for *heort-hama* = *heart cover* = *pericardium* or *midriff*.

Stanza 39. *Inginem* perhaps for *inguinem*. B reads *iunginam* and A glosses *pa sceare* = *shears* or *scissors* = perhaps for the *crutch* or *fork of the legs*.

Stanza 40. *Pantes* for πάντες = *all*. B reads *partes*, D *pantas*. A and H gloss *ealle* = *all*. E glosses *omnes*.

Stanza 42. *Sensibus cum decim fabre factis foribus*. A and D gloss *mid ten durum* = *with ten doors*. The ten doors or portals of entry of sensations is a mediaeval commonplace. The mouth counts for two (*oesophagus* + *trachea*) the others being eyes, ears, nostrils, urethra and anus. Or the five senses may be more strictly followed and the hands reckoned as the organs of feeling.

The author has to thank Dr. I. Abrahams, Reader in Rabbinic and Talmudic in the University of Cambridge, for suggestions and corrections in connexion with the Hebrew words and sources.

Section of the History of Medicine.

President—Sir D'ARCY POWER, K.B.E., F.R.C.S.

On the Physical Effects of Consanguineous Marriages in the Royal Families of Ancient Egypt.

By the late Sir MARC ARMAND RUFFER, C.M.G.

(Alexandria, Egypt.)

PREFATORY NOTE BY LADY RUFFER.

My late husband left this paper unpublished with five others, all on pathological subjects from Ancient Egypt.

His intention was to reprint them, with twelve others which he had already published and many future ones for which he had taken notes merely, in the form of a book under the title of "Studies in Palæopathology."

Before undertaking the journey to Salonika from which he was destined not to return, he had sent a copy of this paper for approval to his friend, Dr. Singer, of Oxford; and though he never received the paper back, I have adopted Dr. Singer's suggestions with regard to several points. Therefore I gratefully acknowledge his kind help, on giving to the world this note of my husband's on the "Consanguineous Marriages of Ancient Egyptian Kings."

ALICE RUFFER.

The question of the effect on the offspring of marriage between blood relations is still an open one. Whereas the view that the children of consanguineous marriages are likely to be weak and to be the bearers of some congenital defect is widely held, some students of heredity maintain that the facts on which this view is based are not convincing;

and it must be admitted that, from the same data, divergent conclusions have been drawn. Thus the Veddahs of Ceylon systematically practise consanguineous marriage, and some years ago a lurid picture was drawn of the evil effects of these unions. The race, it was asserted, was becoming extinct, the people were stupid, sullen, and degenerated, children had disappeared from the villages, in which adults only were to be seen, and so on. Yet these fears were groundless, for the Veddahs have remained a very simple, harmless, and monogamous tribe.

In Europe the marriage of first cousins is not uncommon, but the effect of such unions on the offspring is still a matter for controversy, and some medical men categorically deny its dangers. Again, the evidence is conflicting. At the Institution for Deaf-mutes in Paris, for instance, the percentage of deaf-mutes born from consanguineous marriages was 28.35 per cent., whereas, in similar Scotch and English institutions, it amounted to 5.17 per cent. only.

The investigations of George Darwin did not reveal any distinct connexion between infertility, deaf-mutism, insanity or idiocy and consanguineous marriages: but this observer thought that the vitality of the children of first cousins was somewhat below normal, and that the death-rate was slightly higher than in the offspring of other unions. Observations made in France and in Denmark do not seem to prove the peril of such unions, and the facts collected in non-European countries are not convincing. When, for instance, the enormous mortality among Persian children is attributed to consanguineous marriages, the fact that in certain Eastern towns the death-rate in children less than one year old amounts to 30 per cent., should be first accounted for.

Nevertheless, the majority of modern peoples exhibit in their legislation a conviction of the perils of consanguineous marriage, and believe that all kinds of evils threaten the offspring of such unions. It is strange, however, that this idea appears to be entirely modern, for although some ancient peoples were opposed to incestuous marriages, there is no reason to believe that this prohibition was due to a belief in evil results to the offspring.

Marriage¹ with a half-sister, not uterine, occurred in Athens, in late times. The Greeks and Romans of the classical period looked upon incest as a crime, though voices occasionally inquired the reason for this opinion, and the fable of Myrrha,² who conceived an incestuous

¹ Robertson Smith, "Kinship and Marriage," p. 191.

² Ovid, "Metamorphoses," x, Fable 8.

passion for her father is well known. The heroine pointedly asks why incest should be a crime among men when it is the rule among animals. "Defend me," she cries, "from a crime so great! *if indeed this be a crime.* It is not considered shameful for the heifer to mate with her sire; his own daughter becomes the mate of the horse; the he-goat, too, consorts with the flocks of which he is the father; and the bird conceives by him from whose seed she herself is conceived. Happy they to whom these things are allowed! The case of man has provided harsh laws, and what Nature permits, malignant ordinances forbid." Myrrha goes on to envy the fate of the nations which allow incestuous relationships.

Consanguineous marriages were not uncommon in early Hebrew records: Sarah was Abraham's¹ half-sister; during Jacob's life marriages between first cousins were allowed; Moses² sprang from a marriage between a nephew and his paternal aunt; and even in David's time³ a marriage between half-brother and sister was allowed.

In Egypt, from very early times, marriages between brother and sister were fashionable, whereas incestuous unions between father and daughter, or mother and son, were very rare, if indeed they ever took place. The Egyptian gods themselves had set the example of incest; Keb, the earth god, and Nut, the sky goddess, had four children—two sons, Osiris and Set, and two daughters, Isis and Nephtys, and children were taught that Osiris married Isis and Set took Nephtys to wife. Isis' lament at the loss of Osiris leaves one in no doubt as to the relationship between the two: "Come to her who loves thee, who loves thee, Wennoffre, thou blessed one. Come to thy sister, come to thy wife, thou whose heart is still. Come to her who is mistress of thy house. I am thy sister, born of the same mother, thou shalt not be far from me . . . Thou lovest none beside me, my brother, my brother."

The royal families followed this lead. Throne and property being inherited through the woman, mother or wife, as legal head of the house, it was very doubtful, says Petrie, "whether a king could reign, except as the husband of the heiress of the kingdom." As the king was the ruler, while the queen, though the heiress to the throne, had no executive power, the only way to keep the regal power in the family was for the nearest male descendant of a king to marry the heiress, who was very often his sister. In considering this relationship, as described

¹ Genesis xx, 12.

² Numbers xxvi, 59.

³ 2 Samuel xiii, 13.

in Egyptian records, caution is however necessary. The word "sister," often a euphemism for mistress or concubine, also meant sometimes the wife of a temporary marriage, or was even used as a term of endearment. The confusion has been increased by the fact that "Royal Sister," was one of the queen's titles, which did not imply that Her Majesty stood in that relationship to her consort. Therefore, in this study, I shall consider a king and queen to have been brother and sister only when there is sure evidence that they were so related.

The marriages of brothers and sisters were frequent among common people also as late as Greek, Roman, and early Christian times. Diodorus Siculus,¹ at the beginning of our era, mentions such marriages among Egyptians. An Amherst papyrus² contains an application from a woman, asking that her son Artemon might be admitted to the list of privileged persons wholly or partially exempt from the poll-tax. The basis of the claim is that the ancestors of the boy on both sides were descendants from a gymnasiarch, and that therefore the boy himself had the right to be included among those "of the gymnasium." The genealogy of Artemon reveals, on the mother's side at least, three successive cases of intermarriage between brother and sister.

The custom persisted during the early Christian era. A papyrus,³ dating from A.D. 108, gives a marriage contract between a certain Apollonios, a Persian τῆς ἐπιγονῆς, and his sister Tapeutis; another Persian married his sister Marouti, and a third married his sister Eriens. Wessely⁴ published several genealogical tables of Egyptian families, from which it appears that in four well-to-do families incestuous marriages were in the majority, and it has been stated⁵ that, under the Emperor Commodus, two-thirds of the citizens of Arsinoë had married their sisters.

As consanguineous unions were so common, the evil results should have been numerous and have attracted popular notice. Yet, as far as I know, no such observations are recorded in Egyptian literature. In what follows we shall select for illustration only those royal families the physical and mental characters of the individuals of which are known.

¹ Diodorus Siculus, i, 1.

² Grenfell and Hunt, "Amherst Papyri," No. 75, p. 90.

³ J. Nietzold, "Die Ehe in Aegypten," p. 13.

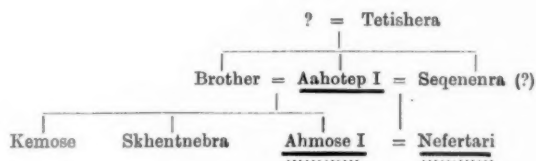
⁴ *Ibid.* Loc. cit.

⁵ Erman, "Life in Ancient Egypt," p. 153.

EIGHTEENTH DYNASTY KINGS.

Queen Aahotep I, the heiress of the royal line of Hierakonpolis, married first a man (name unknown) who was certainly her brother, for on the stela of Abydos, put up in honour of his (and his wife's) grandmother, Tetishera, her son Ahmose I exclaims: "I it is who have remembered the mother of my mother and the mother of my father, Tetishera."¹ The queen's second husband was Seqenenra, who was a relative, and perhaps a brother. The mummy of this slim and remarkably muscular king, who died fighting the Hyksos, measures 1.702 m. in length, and the cranium is 0.195 m. long and 0.131 m. broad. The portrait of Queen Aahotep I, on the lid of her coffin in Cairo, is that of a well nourished young person with good features. She had eleven children by her two husbands.²

Ahmose I, who was thus the son of an incestuous union, married his sister or half-sister, Nefertari (figs. 1 and 2), whose wooden statuette at Turin represents a buxom, well-formed woman, with no obvious sign of degeneration. After reigning for twenty-five years with Ahmose I, she acted as adviser to her son, Amenhotep I, and must have been fairly advanced in years at the time of her death. She was "the first of those queens by divine right who, scorning the inaction of a harem, took on themselves the right to fulfil the active duties of a sovereign."³ After her death the people raised her to divine rank; she, together with her son, Amenhotep I, sprung from the marriage with her brother, were regarded as specially "gracious and helpful." Her name was put on the same plane as those of the great gods, and she was worshipped for six hundred years after her death.

TABLE I.⁴

¹ Petrie, "A History of Egypt," i, p. 225.

² *Ibid.*, "Abydos," iii, plate LII.

³ *Ibid.*

⁴ In this and the following tables I have underlined the descendants of consanguineous marriages with a full line, and the rulers (who succeeded to the throne for the most part by right of marriage with their sister-wives) with a dotted line.—ALICE RUPPER.

Ahmose I, her brother and husband, ascended the throne about 1580 B.C., when Egypt was endeavouring to throw off the yoke of foreign conquerors, the hated Hyksos, who for nearly two hundred years had ruled the country. During his brilliant reign of twenty-four



FIG. 1.

Fig. 1.—Nefertari.



FIG. 2.

Fig. 2.—Queen Nefertari, wife of Ahmose I. From a wooden statue at Turin (Alinari).

years this great king drove the aliens out of Egypt, and by carefully protecting the frontier made a new invasion extremely difficult. He thus made Egypt a strong military state and established the dynasty

on a firm footing. His successors conquered Syria and held it for several generations in spite of the repeated risings of local chiefs. Ahmose also began the restoration of the buildings of Upper Egypt, which had fallen into decay under the Hyksos rule. He died at the age of 55. His mummy measures 1'63 m. in length. The face, like that of all the rulers of the earlier eighteenth dynasty, is comparatively small, the nose prominent, though in the dried body this organ looks small and narrow; the face is ovoid, the chin narrow, the superciliary ridge fairly marked, and the upper teeth are prominent as in the women of the family and in Thutmose II. The length of the head (including wrappings) is 207 mm., and the breadth (without wrappings), 156 mm.

TABLE II.

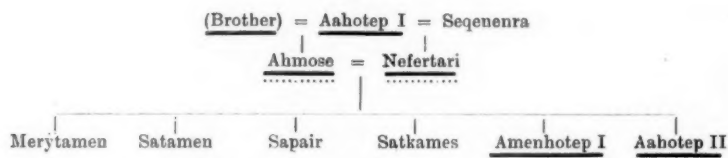
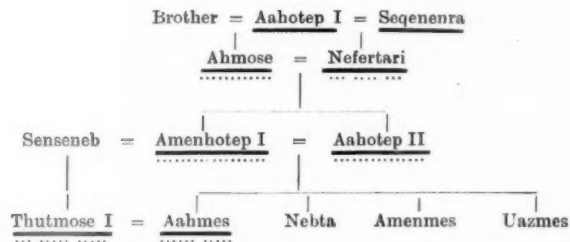


TABLE III.



Amenhotep I, son of Ahmose I, reconquered Nubia, repelled an attack of the Lybians, invaded Syria and reached the Euphrates. He added to the temple of Karnak and to those on the opposite bank of the Nile. The divine honours which were paid to him for nigh six hundred years after his death bear witness to the strength of his personality (fig. 3). He reigned twenty-one years, and died when 56 years old.¹ His mummy in the Cairo Museum, not yet unrolled, is that of a short man, measuring 1'65 m. in length.

Of his sister and wife, Aahotep II, little is known. The union

¹ Petrie, "A History of Egypt," i, p. 54.

brought forth four children—two sons, Amenmes and Uazmes,¹ and two daughters, Aahmes and Nebta. One of the sons was associated for a time with his father in governing the country. One daughter, Aahmes, married her half-brother, Thutmose I, the son of her father by Senseneb, probably a slave. Her portrait adorns the walls of the temple of Deir-el-Bahari (fig. 5), and without doubt her expression is

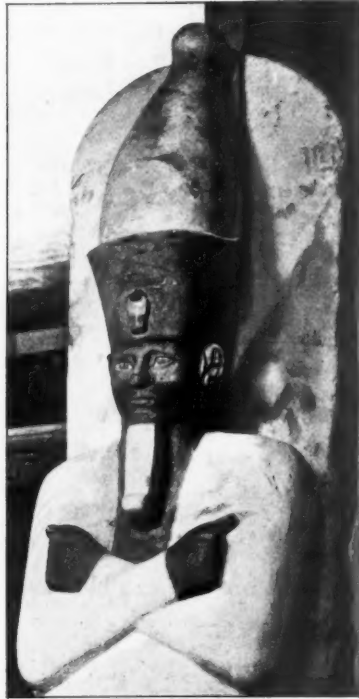


FIG. 3.

Amenhotep I. (British Museum.) (W. A. Mansell.).

fascinating; the features are refined, and it would be difficult to find a nobler countenance than that of this queen, the descendant of incestuous marriages of great-grandparents, grandparents, and parents. The length of her life is unknown.

¹ Buttles, "The Queens of Egypt," p. 71.



FIG. 4.

Thutmose I. From G. Elliot Smith, "Catalogue général des antiquités égyptiennes du Musée du Caire," Cairo, 1912.



FIG. 5.

Queen Ahmes. From E. Naville, "The Temple of Deir-el-Bahari," London, 1898.

Her husband and half-brother, Thutmose I, ascended the throne about 1535 B.C., led an expedition into Nubia, forced his way through the cataract, and seized and strongly fortified the country. He then invaded Syria and reached Naharin, that is the country from Orontes to the Euphrates and beyond, where he slew or made prisoners many of his foes. At home he was a passionate and successful builder. He built the temple of Set at Nubt, near Negadah, the great temple of Medinet Abou, probably designed the temple of Deir-el-Bahari, added pylons and an obelisk to the temple of Karnak, and protected his country by rebuilding the frontier defences. He died at the age of 48, after celebrating the thirtieth anniversary of his coronation.

The authenticity of the mummy (fig. 4) supposed to be that of Thutmose I is not quite certain, though the likeness to Thutmose II leaves little doubt that this mummy is that of Thutmose I or of some near relative. It is 1.54 m. long. The cranium measures 0.18 m. by 0.133 m., and the narrow, long, refined face is that of a clever and cunning person.

The marriage of Aahmes with her half-brother, Thutmose I, had issue two sons and two daughters, of whom both boys and one daughter died young. The second daughter, Queen Hatshepsut I, in spite of opposition, was associated with her father in the government of the kingdom. Thutmose I had married, beside Queen Aahmes, a woman of only half royal lineage, Mut-nefert; and Hatshepsut, following the royal tradition, married her half-brother, Thutmose II, born from the latter marriage.

Thutmose II added a pylon to Karnak, decorated the temple with statues, and inscriptions relating to his work are met with as far as Barkal in the Sudan and the Oasis of Farafra. The mask, statues, and mummy of Thutmose II (fig. 6) represent a smiling and amiable countenance, with features somewhat weaker than those of Thutmose I, whom he otherwise resembles. The body is thin, somewhat shrunken, and not very muscular, and measures 1.684 m., the bald head being 0.191 m. long by 0.149 broad, and the face wrinkled.

Thutmose's half-sister and queen, Hatshepsut, proved an exception to the rule that the female members of the family inherited the Egyptian crown but exerted no authority, for she overshadowed her husband and was the actual sovereign, and he merely the king-consort. She "acted as master of the country. The kingdom was subjected to her will. Egypt bowed its head."¹

¹ Maspero, "The Struggle of the Nations," p. 42.

TABLE IV.

	Senseneb	=	<u>Amenhotep I</u>	=	<u>Aahotep II</u>
	Mut-nefert	=	<u>Thutmose I</u>	=	<u>Aahmes</u>
Aset	=	<u>Thutmose II</u>	=	<u>Hatshepsut</u>	
	<u>Thutmose III</u>	=	<u>Merytra Hatshepsut</u>		



FIG. 6.

Thutmose II. (Bonfils.) Cairo.

After the death of Thutmose II the queen, according to the custom of the country, shared the kingdom with her nearest male relative, Thutmose III, the son of her former husband by Asat, who apparently was not of royal birth.

To strengthen her position the queen claimed direct descent from the god Amon, and her miraculous conception, birth and education are recorded on the walls of the Luxor temple. With remarkable energy she restored many buildings, built the temple of Deir-el-Bahari, began the façade at Speos Artemides; brought an obelisk from Nubia to

Luxor and fitted out an expedition to the land of Punt, which returned with great treasure, quaint animals and plants. Her reign was perhaps too peaceful, as it was probably during this period that some of the Asiatic provinces were lost to Egypt. A wise ruler, she exercised her power with justice and moderation during her long reign, and throughout the Nile Valley, from Buto in the Delta, by way of Beni-Hasan, Karnak and Thebes, El Kab, and Kom Ombo, to Assouan at the First Cataract of the Nile, and from the far rock cliffs of Sinai, sculptured stone and inscribed stelæ record the reign of Hatshepsut, fulfilling the wish voiced in her temple that her name may remain and live on in temple and land for "ever and ever." Nothing, unfortunately, is known about her personal appearance, as the Luxor and Deir-el-Bahari portraits are conventional and for the most part obliterated by her successors.

No less remarkable than Hatshepsut was her nephew and step-son, Thutmose III,¹ the son of a father descended from a series of incestuous marriages, and of a mother who was not of royal blood. After Hatshepsut's death he became one of the strongest rulers in Egyptian history; during her lifetime his influence had not been felt. His Majesty was somewhat short, measuring 1'615 m., his cranium was 0'196 m. long and 0'150 m. broad, and though he died at an advanced age his mummy with its distinguished features gives, in spite of the bald head, the impression of a youngish person. The upper teeth project greatly (fig. 7).

His character² stands forth with more of colour and individuality than that of any king of Early Egypt, except Akhnaton. We see the man of a tireless energy unknown in any Pharaoh before or since, the man of versatility, designing exquisite vases in a moment of leisure; the lynx-eyed administrator, who launched his armies upon Asia with one hand and with the other crushed the extortionate tax-gatherer.

Thutmose III left his mark on Heliopolis, where he erected the two famous obelisks, on Abusir, Memphis, Gurob, &c. Koptos was entirely rebuilt, Karnak was extended, Medinet Abou and Deir-el-Bahari were completed, more than thirty different sites in Egypt and Nubia were built over, and innumerable fragments of statues, sphynxes, statues, &c., testify to the building activity of this great warrior. His reign marks

¹ Thutmose III is held by some to have been the son of Thutmose I and not of Thutmose II. If that be true, he married not his sister but his niece. See Petrie, "A History of Egypt," ii, p. 78.

² Breasted, "A History of Egypt."

an epoch not only in Egypt, but in the whole East as we know it in his age. Never before in history had a single brain wielded the resources of so great a nation and wrought them into such centralized, permanent, and at the same time, mobile efficiency, that for years they could be brought to bear with incessant impact upon another continent as a skilled artizan manipulates a hundred-ton forge hammer; although



FIG. 7.

Thutmose III. (British Museum.)

that figure is inadequate unless we remember that Thutmose forged his own hammer. The genius which rose from an obscure priestly office to accomplish this for the first time in history reminds us of an Alexander or of a Napoleon. He built the first real empire, and is thus the first character possessed of universal aspects, the first world hero. He made not only a world-wide impression upon his age, but an

impression of a new order. His commanding figure, towering like an embodiment of righteous penalty among the trivial plots and treacherous schemes of the petty Syrian dynasts, must have clarified the atmosphere of Oriental politics as a strong wind drives away miasmatic vapours. The inevitable chastisement of his strong arm was held in awed remembrance by the men of Naharin for three generations. His name was one to conjure with, and centuries after his empire had crumbled to pieces, it was placed on amulets as a word of power. He died at the age of 63.



FIG. 8.

Amenhotep II, Karnak. From Legrain's "*Catalogue général des antiquités égyptiennes du Musée du Caire*," Cairo, 1906.

Thutmose III married his half-sister, Meryt-Ra Hatshepsut, Queen Hatshepsut's daughter, and also another woman, Sat-Aah. The number of his children is unknown, but he is said to have had eight daughters.

Amenhotep II, the son of Thutmose III and Meryt-Ra Hatshepsut, was 1'63 m. in height. He was associated with his father in government for some time, and ascended the throne when about 18 to 20 years old, reigned for twenty-five years, and died at the age of 46. His physical strength was extraordinary, and he claimed that no one could bend his bow (fig. 8).

On the death of Thutmose III, the Syrian tribes almost simultaneously rose in revolt, but they had not reckoned with the boundless energy of the new king. Amenhotep II left Egypt with his army in

April and already in May defeated the Syrians in a battle, in which he with his own hand took eighteen prisoners and fifteen horses. He advanced with irresistible power, crossed the Euphrates triumphantly, returned to Egypt, and equally successful in the South, he conquered part of the Sudan.

Amenhotep II married¹ Tiaa, who may have been his half-sister by a mother not of royal birth. Their son, Thutmose IV (fig. 9), an energetic lion hunter in his youth, came to the throne at the age of 24, and showed his energy by leading an expedition to Syria, from which he returned with a cargo of cedar and many prisoners. He contracted an



FIG. 9.

Thutmose IV. From G. Elliot Smith, "Catalogue général des antiquités égyptiennes du Musée du Caire," Cairo, 1912.

alliance with Babylonia and with the Mitannian king, whose daughter, Mutemuya,² he married. He died at the age of 33.

Thutmose IV was followed by his 16-years old son, Amenhotep III, who married the celebrated Tiy (fig. 11), a woman of uncertain origin, perhaps a Syrian princess of partly Egyptian descent, and also another Syrian princess, Kirgipa or Gilukhipa. The reign of this king was

¹ Buttes, "The Queens of Egypt," p. 101.

² Breasted, "History of Egypt," p. 328.



FIG. 10.

Amenhotep III. From Legrain's "Catalogue général des antiquités égyptiennes du Musée du Caire," Cairo, 1906.



FIG. 11.

Queen Tiye. (Berlin.)

marked by great expansion of art and commerce due to peaceful development at home rather than by great conquests. He reigned for thirty-six years and died when about 52 years old (fig. 10). Owing to their shorter reigns, Amenhotep II, Thutmose IV and Amenhotep III built far less than their predecessors.

Amenhotep IV (figs. 12 and 13), or Akhnaton, the last king of this dynasty to play a leading part in history, was the grandson of Mutemuya,



FIG. 12.

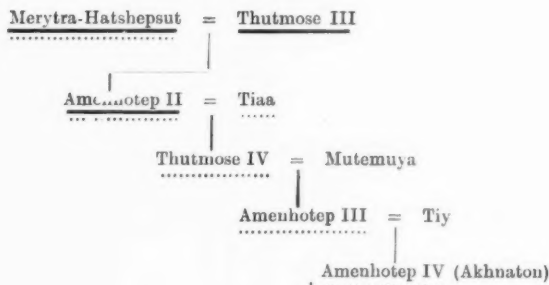
Amenhotep IV. (Berlin.)

a Syrian woman, and the son of Tiy, whose nationality, as just said, was uncertain, and his peculiar genius therefore may have been due to the foreign blood in his veins or to the powerful influence exerted on him by his mother.

The characteristic traits of Akhnaton were religious enthusiasm and

a high moral standard. As Weigall has pointed out, he was the first Egyptian monotheist,¹ and monogamist at a time when polytheism and polygamy were the fashion, and a pacifist when Egyptians were enjoying the fruits of their conquests. He erected an entirely new town, Akhetaton, now Tell-el-Amarna, which he adorned with the temples of Queen Tiy, of Baketaton the king's sister, of Queen Nefertiti, and last, but most important of all, with the great temple of Aton. An "intellectuel" of the first order, he patronized a new and realistic form of art, but his fanatical hatred of the ancient religion led to the destruction or mutilation of countless ancient artistic treasures, and his neglect of royal duties, his inertia and physical laziness brought about the loss of the Syrian kingdom. In truth, he showed in some of his actions as little common-sense as some other religious reformers have done. Nevertheless, a monarch who founds a monotheistic religion in the teeth of the opposition of a most powerful priesthood, who builds a new town where he worships his god away from old associations and among congenial surroundings, who endows that new town with beautiful temples, who patronizes a new form of art and who perhaps composed the magnificent hymn to Aton, cannot be considered as lacking in energy, or as a degenerate, or an effeminate person (fig. 14).

TABLE V.



The characteristics of the Eighteenth Dynasty were thus tireless energy, which enabled Egypt to resist its foreign foes, to carry the Egyptian flag abroad and to establish wise government at home, and an enlightened taste for the fine arts most forcibly shown in the artistic reforms of Akhnaton. In these nine generations, issued from consanguineous marriages, there is no diminution of mental force. The

¹ Weigall, "Akhnaton."

energy characteristic of Ahmose I is found two hundred years afterwards in Akhnaton, used it is true for different objects and higher ideals, but as intense in 1375-1358 as it was in 1580-1557. Akhnaton's ideal may



FIG. 13.

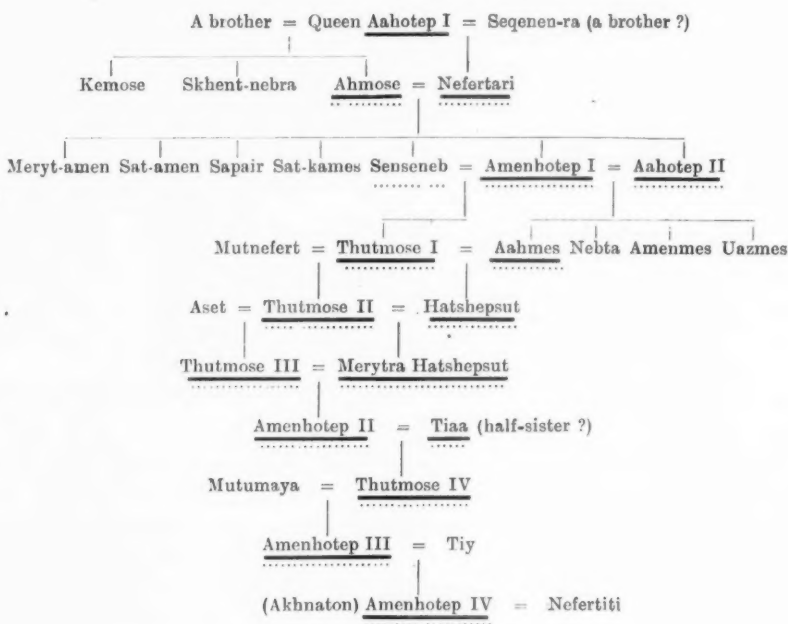
Amenhotep IV or Akhnaton. From a statue in the Louvre.

have been suggested by his mother, the clever Queen Ti; his energy and keen intellect he inherited, in part, at least, from his father.

In the absence of any data regarding the average number of children in Egyptian families, it is not possible to compare accurately the fertility

of the consanguineous unions of the Eighteenth Dynasty with that of unrelated people from the same period; all that can be said is that without doubt these incestuous unions were blessed with many children. Moreover, the sexual power of the male members of the family is proved by the fact that they had families by their sisters, wives, and by other women as well. Table VI giving the children known to have been born to the kings and queens of this dynasty is necessarily incomplete, as the number of children born in and out of wedlock cannot even be guessed at, and indeed many of those mentioned in the table would have been entirely forgotten had it not been for the accidental discovery of some document or object inscribed with their names. The infants who died, the miscarriages, and the illegitimate children, &c., must remain an unknown quantity, though it can be asserted that the number of children born was certainly larger than that given in this table. In the case of the Eighteenth Dynasty therefore, loss of prolificity did not follow consanguineous marriages.

TABLE VI.—EIGHTEENTH DYNASTY KINGS.



The second evil usually attributed to consanguineous marriages is diminished duration of life in the offspring. The figures referring to this point given in Table VII are approximate only, for some monarchs may have lived a few years more or less, and further, as the mean duration of life in ancient Egypt is unknown the value of the table is diminished; but in any case, an average duration of life of 44 years cannot be considered as short.



FIG. 14.
Death-mask of Akhnaton.

TABLE VII.

Ahmose I	...	Reigned from 1580-1557 = 22 years	...	Died at 55
Amenhotep I	...	" " 1557-1501 = 56	{ ...	" 56
Thutmose I	...			" 48
Thutmose III	...	" " 1501-1447 = 54	" ...	" 63
Amenhotep II	...	" " 1448-1420 = 26	" ...	" 46
Thutmose IV	...	" " 1420-1411 = 8	" ...	" 33
Amenhotep III	...	" " 1411-1375 = 36	" ...	" 45
Amenhotep IV	...	" " 1375-1358 = 17	" ...	" 27

There is no evidence to show that idiocy, deaf-mutism, or other diseases generally attributed to consanguineous marriage, ever occurred among the members of this dynasty, and as far as can be ascertained from mummified bodies, masks and statues, the features of both men and women were fine, distinguished and handsome.

The heights and cranial circumferences are shown in Table VIII. The kings, though not tall men, were by no means undersized and their height is well maintained during nine successive generations. The cranial measurements of 413 living modern Egyptians¹ give an average of 0.184 m. by 0.133 m. which almost exactly corresponds with the cranial measurements of Thutmose I.

TABLE VIII.

	Height	Cranial measurements	
		Length	Breadth
Ahmose ...	1.63 m.	0.207 m.	0.156 m.
Amenhotep I ...	1.65 m.	—	—
Thutmose I ...	1.54 m.	0.180 m.	0.133 m.
Thutmose II ...	1.685 m.	0.191 m.	0.149 m.
Thutmose III ...	1.61 m.	0.196 m.	0.150 m.
Amenhotep II ...	1.67 m.	0.191 m.	0.144 m.
Thutmose IV ...	1.65 m.	0.184 m.	0.143 m.
Amenhotep III ...	1.56 m.	0.194 m.	0.148 m.
Amenhotep IV ...	mummy incomplete	0.189 m.	0.154 m.

The portraits and mummies are those of stout, well-nourished persons. Although the mummified body of Thutmose II, for instance, is now reduced to little more than skin and bone, the redundancy of the skin of the abdomen, thighs and cheeks is a proof of the obesity of the king. Perhaps the most typical instance of pathological obesity in the family is seen in the portraits of the heretic King Akhnaton (1374-1356 B.C.) who is represented as a man with a thin face, neck and legs, but with a very protuberant abdomen. There is no reason to doubt that the portraits of the monarch are faithful likenesses. True, the abdomen is rather prominent in other people represented at Tell-el-Amarna, owing chiefly to the cut of the dress, which, firmly tied below the umbilicus, caused the lower part of the abdomen to protrude; but in persons not wearing this dress the abdomen is flat, and even in men attired in the garment just described, it is never as protuberant as in King Akhnaton. Where the King is represented distributing collars of gold his abdomen actually hangs over the edge of the balcony, a most realistic piece of portraiture. The very thin calves of Akhnaton show that the artist faithfully copied nature. The king's obesity may have been partially responsible for his politics. Corpulent subjects generally dislike physical exertion, and his

¹ "Archæological Survey," p. 25.

stoutness may have been the reason why, when the outlying provinces of his kingdom were threatened, he left unanswered the appeals for help, and thus became responsible for the loss of some of the foreign possessions of Egypt. Another picture from Tell-el-Amarna may be referred to here.¹ It is divided into two halves, the left representing the household of Akhnaton, the right the household of his father, Amenhotep III. It shows that Akhnaton's obesity was inherited, for father and son show the same abdominal deformity. Indeed, the whole royal family is distinctly stout, in contrast with the three lean female servants on the extreme right. The mummy of Amenhotep III (1411-1375 B.C.) is in the Cairo Museum, and it is unfortunate that the body is in such a wretched state that its examination gives little information as to his corpulency.

The skull attributed to Akhnaton, according to Elliot Smith, presents a number of interesting and significant features. The cranium is broad and relatively flattened, its measurements being 0.189 m. in length and 0.154 m. in breadth; 0.136 m. in height; 0.099 m. minimal frontal breadth, with a circumference of 0.545 m. The form of the cranium and the fact that it is exceptionally thin in some places, and relatively thick in others, indicates, in Elliot Smith's opinion, that a condition of hydrocephalus was present during life; and Professor A. R. Ferguson is of opinion that the signs of this disease are unquestionable. Whether the skull is Akhnaton's or not, it is interesting to find that hydrocephalus existed about three thousand five hundred years ago.

The result of this inquiry is that a royal family, in which consanguineous marriage was the rule, produced nine distinguished rulers, among whom were Ahmose the liberator of his country, Thutmose III one of the greatest conquerors and administrators that the world has ever seen, Amenhotep IV the fearless religious reformer; the beloved queen Nefertari, who was placed among the gods after her death; Aahmes, the beautiful queen, and Hatshepsut, the greatest queen of Egypt. There is no evidence that the physical characteristics or mental power of the family were unfavourably influenced by the repeated consanguineous marriages.

¹ "El Amarna," i, ii, xviii.

NINETEENTH DYNASTY KINGS.

The kings and queens of the Nineteenth Dynasty, a remarkably handsome set of people, were probably lineal descendants of those of the Eighteenth Dynasty.

Seti I (figs. 15 and 16), in spite of his big and heavy jaw, presents a most noble and dignified appearance; he measures 1'665 m. in height, and his cranium 0'196 m. by 0'143 m. Ramses II (fig. 17), the great historical figure of this dynasty, married two of his sisters, and had four children by the first, and three, or possibly four, by the second sister. He is said to have married two of his daughters, but the evidence on



FIG. 15.

Seti I, offering. (Abydos.)

this point is not conclusive. By other wives and concubines the king is said to have had 106 other sons and forty-seven daughters, therefore this descendant of a long line of consanguineous marriages cannot be said to have been infertile. His features are strong and refined, the teeth excellent, and the only blemish is the complete baldness. The body measures 1'733 m., and his cranium 0'195 by 0'136 m. (fig. 18).

Little is known about Ramses II's children (fig. 20). One son, Khemwese, became high priest of Ptah, organized the thirtieth anniversary of his father's reign, was associated with the king in the administration of Egypt and predeceased his father. The other children formed the powerful tribe of the Ramessides, which exerted



FIG. 16.

Seti I. (Bonfils.) (Cairo Museum.)



FIG. 17.

Ramses II.

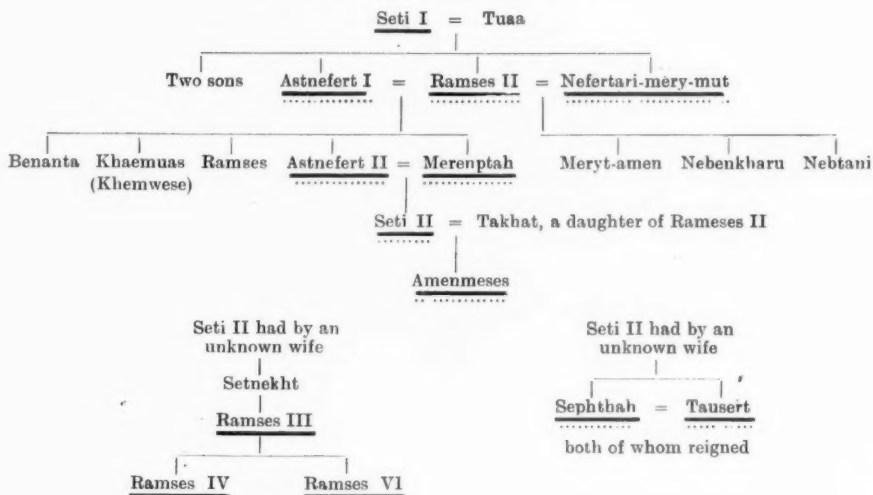


FIG. 18.

Ramses II. (Bonfils.) (Cairo Museum.)

considerable influence for many generations; one daughter, Ben-anta, was charmingly pretty.

TABLE IX.—NINETEENTH DYNASTY KINGS.



Merenptah (fig. 19), the son of Ramses II, by his first sister, was more than middle-aged when he succeeded his father, and he, in spite of his years, dealt energetically with the foes of Egypt. When the Lybians threatened the very existence of Egypt, he assembled his nobles, stirred up their enthusiasm by an eloquent speech, and with their help inflicted a crushing defeat on the Lybians and their European mercenaries. Turning then to Palestine, he subdued the country and levied tribute on the land.

"All lands are united, they are pacified. Every one that is turbulent is bound by King Merenptah."

Merenptah's building activities were not great, and his method of obtaining stone by breaking up ancient monuments, though closely imitated afterwards by Mehemet Aly and in still more recent times by British administrators, is not to be commended. He died after a reign of ten years, when approximately 70 years old, and is probably the Pharaoh of the Exodus, commonly believed to have been drowned in the Red Sea. His mummy measures 1·714 m. His cranium 0·185 m. by 0·160 m. The aorta was calcareous.



FIG. 19.

Fig. 19.—Merenptah. Grey granite figure from his temple (Thebes).



FIG. 20.

Fig. 20.—Merytamen, daughter of Ramses II.



FIG. 21.

Seti II. From his statue.

Merenptah married Ast-Nefert II, most probably his sister. Their son and successor, Seti II (fig. 21) died (murdered ?) after a very short reign, during which he carried out many important public works. He was probably fairly advanced in years at the time of his death.

The heights and cranial measurements of the Ramessides are shown in Table X.

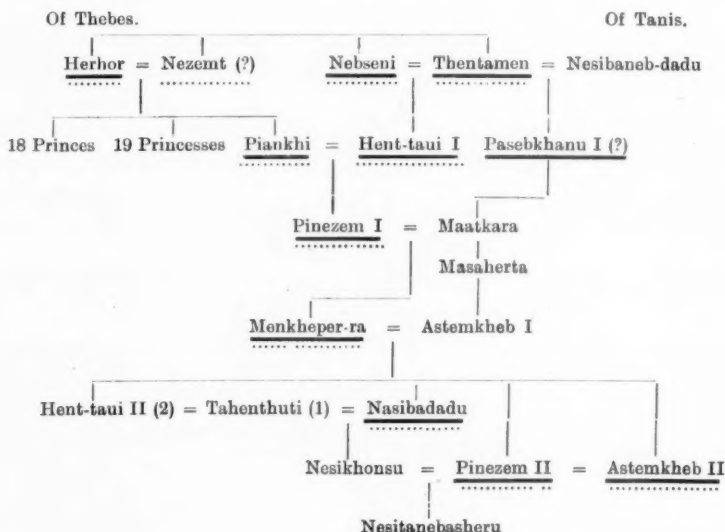
TABLE X.

		Height		Cranial measurements
Seti I	...	1·665 m.	...	0·196 m. by 0·143 m.
Ramses II	...	1·733 m.	...	0·195 m. „ 0·136 m.
Merenptah	...	1·714 m.	...	0·185 m. „ 0·160 m.
Seti II	...	1·640 m.	...	0·187 m. „ 0·141 m.
Sephtah	...	1·638 m.	...	0·189 m. „ 0·147 m.

(King Sephtah suffered from left talipes equinovarus.)

Table XI gives a résumé of the chief marriages of the twenty-first Dynasty, and shows that consanguineous marriages were common, and marriages between brother and sister very few.

TABLE XI.—TWENTY-FIRST DYNASTY, RAMESSIDE LINE.



King Herhor married Nezemt, who was probably a near relative and possibly his sister, and at Karnak she is represented at the head of a long list of her children, eighteen princes and nineteen princesses. The grandson Pinezem I, reigned over forty years, but very little is known about the rest of the family.



FIG. 22.

Takhat. From tomb of Amenmeses.



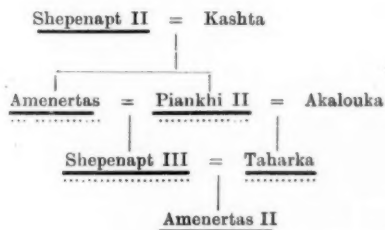
FIG. 23.

Amenmeses. From his tomb.

ETHIOPIAN KINGS.

The Ethiopian Dynasty also followed the custom of close inter-marriage. Queen Amenertas married her brother Piankhi II, and their daughter Shepenapt III married her half-brother, Taharka, the son of Akalouka, and a child, Amenertas II (and possibly others) was born from this consanguineous marriage. Taharka was a man of foresight, power and courage, but unfortunately, we know practically nothing of Amenertas II.

TABLE XII.



PTOLEMAIC KINGS.

(1) *Direct Line.*

The history of the Ptolemies is of special interest to the student of heredity, because the first four kings of the family not sprung from consanguineous unions, can be compared with the later kings who were born when such marriages had become the rule.

The founder of the dynasty, Ptolemy I (Soter I) (fig. 27, 1) a favourite general and companion of Alexander the Great, enjoyed so great a popularity and influence that at the death of Alexander the satrapy of Egypt fell to him without any opposition, and he lost no time in establishing himself firmly in his new government. He first guarded himself against an attack from the West by occupying Cyrene, which became a province of Egypt, murdered Cleomenes, the financial Controller who had been appointed by Alexander the Great, defeated the regent, Perdiccas, who had marched against Egypt, and put him to death.

At the second settlement of the Empire (321 B.C.), Ptolemy was again awarded Egypt, with whatever lands he could conquer to the west. He seized both Cyprus and Syria, but he evacuated the last province temporarily, as his large army and the powerful fleet he had equipped were only just strong enough to rule and defend Egypt, Cyrene and Cyprus. Indeed, Ptolemy was averse to any increased responsibility unless quite sure of his ground, and hence he prudently declined the royal dignity, which some of his followers endeavoured to thrust on him, until the death of the sons of Alexander the Great had removed the only legitimate claimants to the throne.

The fleet and fortifications secured Egypt against every attempt at invasion from the Eastern frontier. The strength of the Egyptian preparations was demonstrated when the attack of Antigonus by land and by sea failed to reach Alexandria, and the would-be invader finally asked for peace. Later on, Antigonus and Demetrius were defeated by the great coalition, and then Ptolemy who, it must be confessed, had been but a luke-warm supporter of the allies, secured lower Syria and Phœnicia as his share of the plunder. Shortly afterwards, the re-occupation of Cyprus, which he had given up temporarily, his appointment as protector of the league of free cities on the coast and islands of Asia Minor, and his settlements on the coasts of the Red Sea gave him, backed by his fleets, the command of the sea.

At home, the relations between the king and the native Egyptian

population were so friendly that the latter gladly enlisted under Ptolemy's banner, and the large turbulent population of natives, Greeks, Persians, Syrians, &c., was kept well in hand. Ptolemy succeeded—and that was perhaps his most wonderful achievement—in founding in Egypt the cult of Serapis, a divinity adored by both Greeks and natives. Science and art were encouraged, the celebrated Museum was founded, Alexandria became the great scientific centre of the world, trade was encouraged, agriculture developed, exchange made easier by the new coinage, and every department of state was improved by the new ruler.

Ptolemy abdicated in 285 B.C. and died two years afterwards at the age of 84. He had married, probably at Alexander's instigation, a Persian princess, Artakama, about whom nothing is known. Far more celebrated than this first wife was his mistress, Thais, the courtesan, who had at least two children by him. His second legitimate wife was Euridike, the daughter of Antipater, and by her he also had several children. His third wife, Berenike I, a grand-niece of Antipater, supposed without any reason to have been Ptolemy's step-sister, was the mother of several children by another husband at the time of her marriage with the king. Her influence over him was so great that she persuaded him to put aside Euridike's son and to adopt her own son as his heir. Several other children were born, and the king added to his family, already very large, by adopting all his step-children. Divorce from his second wife is nowhere mentioned, and Ptolemy was doubtless living with both his second and third wife at the same time.

The bold and patient father of the Ptolemaic dynasty was a political genius of the first order, a great soldier, a cunning diplomat, an able financier, a promoter of exploration, a master of foreign and home affairs, a religious reformer and a protector of art, science, commerce and agriculture. His private life, on the other hand, judged by our present standard, was far from edifying.

Ptolemy II (fig. 24) (Philadelphus, born 309, died 246), son of the first king, married Arsinoë I (fig. 25), the daughter of the king of Thrace, and later on his own sister, older than himself, by whom he had no issue. His character, like his father's, was bold and cunning, and again like his father, he had in spite of his devotion to his sister, many mistresses¹: Didgona, a native of Egypt, Bilisticha, Agathoclia, Stratonice, Clio his cup-bearer who, clothed in a tunic only and holding a cornucopia in her hand, was represented in many statues, to the scandal even of Alexandria,

¹ Athenæus, "Deipnosophists," xiii, p. 40.

Myrtium, a most notorious and common prostitute, who owned the finest houses in Alexandria, Mnesis and Pothina the flute-player, and many others. His effigies on the coins of the period show a stout, plethoric man (fig. 27, 7) with rather fine classical features, and his sister, Arsinoë Philadelphos (fig. 27, 8), looks a buxom, handsome woman with



FIG. 24.

Ptolemy II, Philadelphus.
(Vatican, Rome.)



FIG. 25.

Arsinoë II, ux. Philadelphus.
(Vatican, Rome.)

regular features. The king died at the age of 63, after having been a martyr to gout.

To look upon Ptolemy II as a common debauchee is doing him a great injustice. He patronised science and art, subsidized the Museum and added considerably to the library, which owned the unprecedented number of 400,000 volumes. The famous Septuagint version of the Bible possibly dates from this time. His foreign politics were successful, and at home his reign appears to have been peaceful.

Allowing for all exaggeration, the "Praise of Ptolemy" by Theocritus shows in what esteem he was held by his contemporaries:—

That king surpassingly is excellent
For wealth, wide rule by sea and o'er much continent.

In many a region many a tribe doth till
The fields, made fruitful by the shower of Zeus ;
None like low-lying Egypt doth fulfil
Hope of increase, when Nile the clod doth loose,
O'er-bubbling the wet soil : no land doth use
So many workmen of all sorts, enrolled
In cities of such multitude profuse,
More than three myriads, as a single fold
Under the watchful sway of Ptolemy the bold.

Part of Phœnicia, some Arabian lands,
Some Syrian, tribes of swart Aethiopes,
All the Pamphylians, Lycians he commands,
And warlike Carians ; o'er the Cyclades
His empire spreads ; his navies sweep the seas ;
Ocean and rivers, earth within her bounds
Obeys him : and a host of chivalries,
And shielded infantry, with martial sounds
Of their far-glittering brass, the warrior-king surrounds.

For o'er the broad lands of that happy sept
The bright-haired Ptolemy strict ward hath kept.

His whole inheritance he cares to keep,
As a good king. Himself hath garnered more :
Nor useless in his house the golden heap,
Increased like that of ants.

(Theocritus. Idyll XVII.)

The third Ptolemy (fig. 27, 2) (Euergetes I) married Berenike of Cyrene (fig. 27, 3). He was a successful warrior and diplomatist, and

a patron of science and religion. The Museum and Library continued to flourish under his reign; he invited great savants, including Erastosthenes, to settle in Egypt, reformed the calendar, and built the temple of Edfou. Of all the Ptolemies, he was the only one whose private life was exemplary. He died when about 63 years old. Physically, there was a great resemblance between him and his father.

Ptolemy IV (Philopator) (fig. 27, 4), the son of Ptolemy III by a princess of Cyrene, succeeded his father, and his life is of great interest, for had he been the child of a consanguineous marriage, his shameful characteristics would doubtless have been attributed to the close relationship between the parents.

The king succeeded¹ "in the heyday of youth, with his education completed by the greatest masters, to a great empire, a full treasury, and peace at home and abroad. Yet, in the opinion of our Greek authorities, Polybius and Strabo, no member of the dynasty was more criminally worthless, nor so fatal to the greatness and prosperity of Egypt."

Shortly after his ascent to the throne, the Queen-mother Berenike, and his brother Magas were murdered. Whether Ptolemy IV had a share in planning these murders is uncertain, but undoubtedly the fact that Sosibius, the chief actor, had considerable influence on the king threw some suspicion on the latter. His debauchery shocked his contemporaries. He loved to surround himself with low courtesans who treated him with scant respect, and his Greek mistress, Agathoklea, and her brother Agathokles, at one time the real rulers of the country, prevented him from taking a legitimate wife until the mistress had given up all hopes of having a child. So great was this woman's influence over him that Strabo simply calls him: "Philopator, he of Agathoklea." Finally he married his sister, Arsinoë III (fig. 27, 5), who was afterwards murdered by Agathokles.

The disreputable private life of Ptolemy IV did not interfere with his considerable diplomatic ingenuity, administrative skill and military efficiency. On Antiochus attacking Egypt, an army was quickly raised, and the king, accompanied by his sister Arsinoë, defeated his foe at Raphia, and this victory and his strong government so impressed his neighbours that, during his life time, Egypt was not attacked again. In spite of his debauchery, he interested himself in intellectual pursuits, wrote tragedies, added to Philae, to Ar-hes-Nefer,² and built

¹ Mahaffy, "A History of Egypt: Ptolemaic Dynasty," p. 127.

² Mahaffy, loc. cit., p. 138.

temples at Edfou, Alexandria, and probably at Naukratis also. His handling of home affairs, on the other hand, was not altogether successful; rebellion in lower Egypt had to be quelled, and at the time of his death, Egypt and Nubia were in a state of anarchy. The employment of native officers and soldiers ultimately led to a revolution, for he realized as little as some administrators do now, that one cannot give away power, and at the same time retain it.

Allowing then for the exaggerations of Polybius, of Strabo and of the Jews, whom he had offended, the king may be described as a man whose life was soiled by culpable weakness and debauchery, but to some extent redeemed by a love of art and letters, and who, in his political actions, showed considerable ability and originality. The only known child of Ptolemy IV and his sister was Ptolemy V, Epiphanes (209), and as both king and queen died in 204, their other progeny, if any, cannot have been numerous.

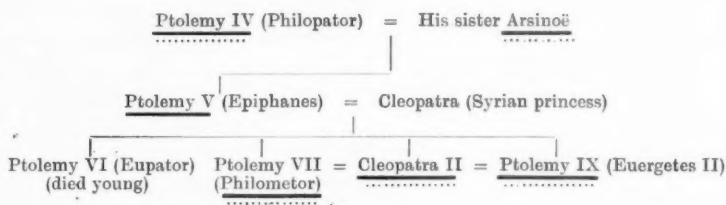
Ptolemy V was only 5 years old when he came to the throne. He was betrothed to Cleopatra, a Syrian princess, when 11 years of age (198 B.C.) and married her five years afterwards.

On the coins of the period we see a stout, distinctly good-looking, young man (fig. 27, 6). He enjoyed a great reputation as an athlete and was fond of field sports, and like his forefathers, he was cruel, treacherous, and tyrannical whenever it suited his purpose to be so. His foreign policy certainly was not a success, but, as Mahaffy explains, he is hardly to be blamed for the sore diminution of the Egyptian empire during his reign; for the rise of the Romans, the astuteness of Antiochus, the invasion of his island empire by Philip, and his predecessor's mistaken policy of arming the natives, were all factors which would have beaten the strongest man. He died at the age of 29, and it is not improbable that he was murdered.

The marriage of Ptolemy V (Epiphanes) with the Syrian princess was blessed with at least four children. One son, Ptolemy VI (Eupator), died young. Another son, Ptolemy VII (fig. 27, 9) (Philometor), the descendant of consanguineous grandparents, was 7 years old when he ascended the throne (181 B.C.), and was killed at the age of 43 (145 B.C.). When still a boy of 15, he, with his sister-wife Cleopatra II, successfully organized the resistance to King Antiochus, quelled rebellions in Upper and Lower Egypt, reconquered and pacified Nubia. In Upper Egypt he did considerable building work. His quarrels with his brother, the clever and unscrupulous Ptolemy IX (Euergetes II), would fill a volume. His treatment of his brother was magnanimous for,

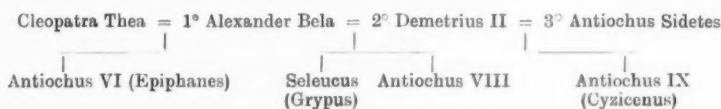
having taken him prisoner, he spared his life and forgetting the past, suggested they should form a new alliance by a marriage between his own daughter and Euergetes, to whom he left Cyrene. The fear of the Romans may possibly have made these arrangements advisable, but it is only fair to assume that his natural kindness and the ties of blood urged him to follow this course. King Philometor was the Ptolemy, "virtuous, pious, and kindest of men" to whom the companions in arms in Cyprus dedicated a crown of gold in the temple of Delos. They thank him for his benefactions to them and their homes, but they especially admire the kindness and magnanimity with which he made friendship and peace.

TABLE XIII.



Cleopatra Thea, one of the children born of the incestuous marriage between Philometor and his sister, was married to Alexander Bela, King of Syria, and when her father and husband quarrelled, she left the latter and married her husband's rival, Demetrius II. The fortunes of war having compelled her second husband to fly the country and to marry the daughter of his captor, Cleopatra Thea at once retaliated by marrying Demetrius' brother, Antiochus VII Sidetes. The Queen had children by all these husbands. She was not as has been suggested, a weak simpleton, but a wicked, energetic woman, who shed blood whenever the success of her plans required it. She betrayed her husband, Demetrius II, who was assassinated with her knowledge, murdered her son, Seleucus, and another son, Antiochus VIII, escaped the same fate only by compelling his mother to drink the poison she had prepared for him. There was no lack of energy, though for evil, in this queen, the offspring of an incestuous union.

TABLE XIV.



After her brother-husband's death, Cleopatra II married her other brother, Ptolemy IX (Euergetes II) (fig. 27, 10), by whom she is supposed to have had one son, Memphites, who was assassinated by his own father. The story however is so obscure and improbable that its truth may well be doubted. Ptolemy Euergetes II, nicknamed Physkon (Sausage), also married his wife's daughter, Cleopatra III, (fig. 27, 11), at once his niece and step-daughter, after, it is said, outraging her.

It is difficult to estimate justly the character of this king, the greatest historians differing in their opinion of him; but the appreciation given by Mahaffy, appears so equitable and temperate that I cannot do better than reproduce it here:¹ "Our Greek authorities tell us of nothing but the crimes and follies of Physkon, tempered by Greek distractions of writing memoirs, and of discussions with the learned Greeks of the Museum. All the world, not to say his own nation, are described as filled with horror at his enormities. If we turn to inscriptions and to papyri we find the king and his queens commemorated in friendly dedications to and by his officers in Delos, in Cyprus and in Egypt. He extends the commercial bounds of Egypt to the south and east; he keeps Cyrene perfectly still and undisturbed, probably under the vice-royalty of his son Apion. He so far manages to control two ambitious queens, probably at deadly enmity, that at the very close of his life they both appear associated with him in the royalty as if nothing had happened to disturb the peace of the palace. Throughout the country the legal and fiscal documents still extant show the prevalence of law and order.

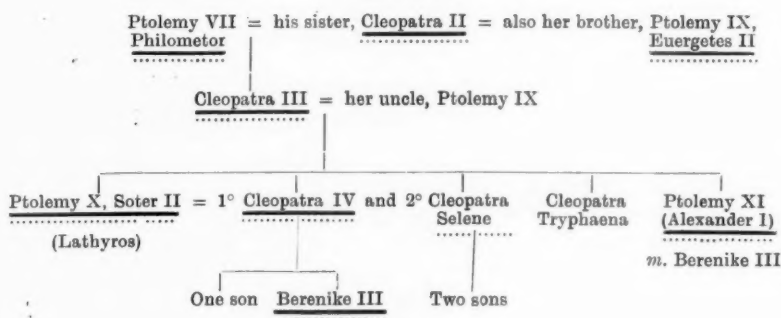
"Modern criticism, suspicious of the exaggerations familiar to ancient rhetoricians, may lighten the burden of crimes and maledictions with which he is charged, but it is not possible to wipe out all the lines of this repugnant caricature. He was, in any case, an energetic figure, a despot without scruples, but not without intellect, who seems to have summed up in himself and carried away all the virility of his race."

His wife and niece, Cleopatra III, a masterful woman, had an almost pathological hatred for her first son. Again and again did she endeavour to remove him from the throne and to place the crown of Egypt on the head of her second son, Ptolemy XI (Alexander). "Never, that we know of," wrote Pausanias, "was there a king so hated by his mother." For many years, the history of Egypt is that

¹ Mahaffy, *loc. cit.*, p. 202a.

of the quarrels and intrigues of this strong-minded woman and her two sons. The first son, Ptolemy X (nicknamed Lathyros), married his sister, Cleopatra IV, during his father's reign and a son had been born, when his mother, Cleopatra III, compelled the young king to repudiate his wife and to marry his other sister, Cleopatra Selene, who had two sons by him. When Lathyros had to fly from Egypt, Selene retired to Syria where she married three husbands in succession, and was finally put to death by Tigrane, King of Armenia, after having had four, probably five, and perhaps more sons, by her four husbands; of these the first was her brother, the second and the third her cousins (the second being himself a descendant of an incestuous marriage), and the fourth her step-son and second cousin. She is the only Cleopatra who is not guilty of one or more murders during her adventurous career.

TABLE XV.



Meanwhile, Cleopatra IV, the first wife of Ptolemy X Lathyros, had gone to Cyprus, enlisted a number of mercenaries, proceeded to Syria, married Antiochus IX, and attacked Antiochus VIII the husband of her sister Tryphaena. The sister, getting the upper hand, had her put to death.

Cleopatra III's last daughter, Tryphaena, married Antiochus VIII Grypos, and after perpetrating the crimes mentioned above was herself murdered by Antiochus XI.

The history of the four Cleopatras, the daughters and granddaughters of incestuous marriages, is a long relation of intrigues and appalling crimes. All had sons and grandsons of whom some are known by name. Very probably many more have been entirely forgotten.

Ptolemy X (Lathyros) died in 80 B.C. at the age of 62. His brother

and rival Ptolemy Alexander I had been killed in 88 B.C. He was probably about 40 years old at the time, and was said to have repaid his mother's kindness to him by murdering her. He resembled her physically for she was nicknamed κόκκη and he κόκκης, "the red one." It is difficult to form an estimate of these two brothers' characters, so completely overshadowed are they by the striking personality of the queen-mother. She it is who occupies the stage; a clever, daring, ruthless, intriguing woman, who for thirty years was the all powerful ruler in Egypt, and certainly her incestuous origin did not prevent her from displaying remarkable energy.

Lathyros by his marriage with his sister Cleopatra IV had a daughter, Berenike III, who married her uncle Ptolemy XI Alexander I, and one son, who was murdered. Posidonios of Rhodes, a contemporary, draws a portrait of this sovereign which is not without humour: "The dynast of Egypt, hated by the people, but flattered by those round him, lived in great luxury, and could not walk otherwise than supported by two acolytes; but in banquets, when he became excited, he jumped from the couch, and executed, barefoot, dances with greater agility than professional dancers." When Ptolemy XI Alexander I, died, his son, Ptolemy XII Alexander II, by a second wife, following the advice of Sylla, married his step-mother, and was murdered shortly afterwards, after putting his wife to death.

The direct line of the Ptolemies now comes to an end, not because the women had become barren, or the men unable to beget children, but because all the male descendants born in legitimate wedlock had been killed or exiled.

PTOLEMAIC KINGS.

(2) *Indirect Line.*

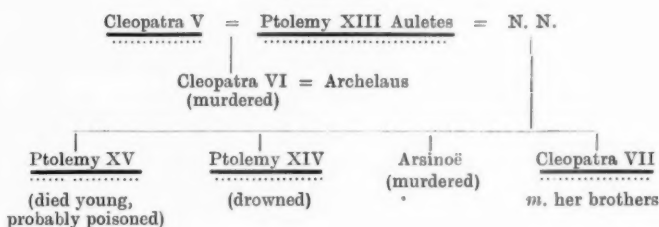
Ptolemy X (Lathyros) (fig. 27, 12) had left two illegitimate sons, and one of them, nicknamed Auletes, the flute player, now laid claim to and ascended the throne, the other son being made king of Cyprus. The latter retained his throne until the Romans occupied the island, when rather than submit to this indignity he poisoned himself.

Auletes married Cleopatra V (Tryphaena II), who was called his sister in official records, though there is no proof that she stood in such relationship to him. His daughter, Berenike IV, was probably by this wife, and by a second wife the king had another family, the most prominent member of which was Cleopatra VII, the great Cleopatra.

Auletes is stated to have been an idle, drunken and wicked man, the whole of these accusations resting on about half a dozen anecdotes, which have as little value as have nowadays the countless stories about royalty. A curious passage of Strabo¹ shows that a good deal of the indignation of ancient Greek authors was due to the king's passion for what would be now considered an artistic occupation. "Besides other deeds of shamelessness," says Strabo, "he acted the piper; indeed, he gloried so much in the practice that he scrupled not to appoint trials of skill in his palace: on which occasions he presented himself as a competitor among other rivals." What would Strabo have said of Frederick the Great, or of Ludwig of Bavaria, or of the Royal Duke who played the violin obligato for a distinguished singer at a public concert?

The king had no easy task. He, a bastard, had to defend his throne against those who had perhaps a more legitimate claim to the throne. No doubt he fleeced his country, but let it be remembered in his favour that his only chance of keeping the throne was by bribing the *whole of the Roman Senate*, and by becoming the prey of Roman money-lenders. His financial struggles, and indeed his whole history, curiously resemble the history of some very modern rulers. To keep himself on the throne at all was a truly marvellous feat, and however disgraceful his private life may have been, his cleverness and genius for intrigue were remarkable.

TABLE XVI.



His son, generally described as a puppet in the hands of his attendants, clearly was not responsible for the murder of Pompey. He fought a gallant fight against Julius Cæsar, and though but a boy without experience, behaved with decision and bravery and perished in battle.

A just estimate of the great Cleopatra (fig. 26) is an almost hopeless

¹ Strabo, loc. cit., xvii, C. I., s. 11.

task, for the accounts of her life, as Weigall has pointed out, are written by her enemies. Her amours with Cæsar and with Antony must not be judged according to our standard, and though it would probably be going too far to maintain that her intrigues with these two men were for political reasons only, there can be no doubt that, had she resisted either of them, Egypt would have been lost to her and to her dynasty. It is sheer nonsense to look upon Cæsar or Antony as the unfortunate victim of a designing woman. By the time Cæsar met Cleopatra, he was an elderly man, who had ruined the wives and daughters of an astonishing number of his friends, and whose reputation for such seductions was of a character almost past belief. Antony also was not a boy but a man of the world, "*un homme à femmes*," who had seduced many women. Cleopatra at that time was a girl of 21 years old, against whose character not one shred of trustworthy evidence had been advanced. The prodigality, the luxury and licence of her court were those of every Eastern court of her time, and no great blame can be attached to her endeavouring to please Cæsar and Antony by sumptuous entertainments. The responsibility for such waste of money should be put with much greater justice at the door of those who allowed her to squander fortunes on their amusement.

Certainly, the audacity, cleverness, and resources of this Egyptian queen, the last offspring of many incestuous marriages, compel our admiration, and had not Cæsar's murder put an end to her ambitions, she might have become the empress of the world! She was musical, artistic and encouraged science; her good spirits were proverbial, and induced her to play harmless and rather pointless practical jokes. She was considered a very fine linguist, perhaps not a great achievement in a town where, to this day, every inhabitant speaks three languages as a rule, where many can converse in five, six or seven tongues, and official correspondence is carried out in three languages.

Of her physical appearance we know but little. Her portraits, if authentic, do not give one the idea of a very beautiful woman, and her charm was probably one of manner. "She was splendid to hear and to see," says Dion Cassius, "and was capable of conquering the hearts which had resisted most obstinately the influence of love and those which had been frozen by age." Another author expresses himself as follows: "Now her beauty,¹ as they say, was not in itself altogether incomparable nor such as to strike those who saw her: but familiarity

¹ Plutarch, "*Life of Antonius*," xxvii.

TABLE XVII.—PTOLEMAIC DYNASTY.



with her had an irresistible charm, and her form, combined with her persuasive speech and the peculiar character which in a manner was diffused about her behaviour, produced a certain piquancy. There was a sweetness in the sound of her voice when she spoke."

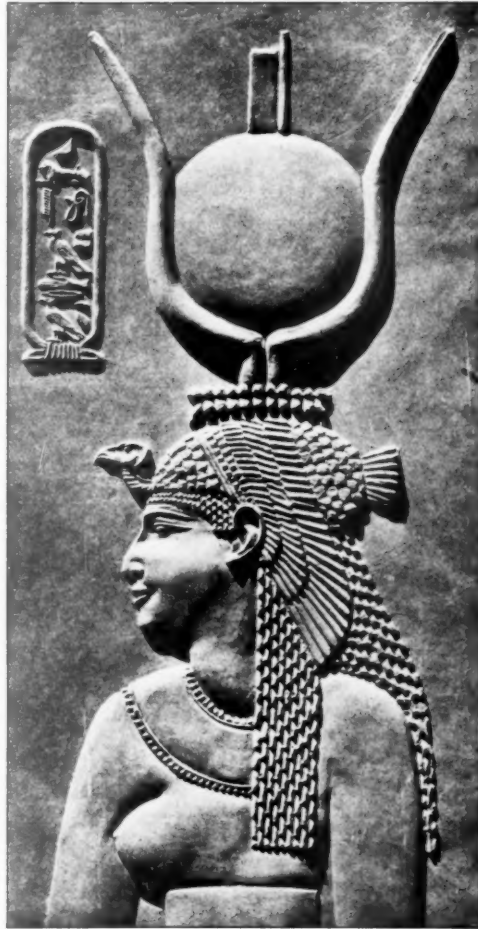


FIG. 26.

Cleopatra VII. Dendera (Bonfils).

1



Ptolemy I (Soter).

2



Ptolemy III (Euergetes).

3



Berenike II.

4



Ptolemy IV (Philopator I).

5



Arsinoë III (Philopator XV).

6



Ptolemy V (Epiphanes).

7



Ptolemy II (Philadelphus).

8



Arsinoë II.

9



Ptolemy VII (Philometor).

10



Ptolemy IX
(Euergetes II).

11



Cleopatra III.

12



Ptolemy X
(Lathyrus).

13



Cleopatra VII.

FIG. 27.

The two charges of cruelty always brought against her are that she murdered her sister, Arsinoë IV, and her brother, Ptolemy XV. The blame for the murder of her sister is minimized by the fact that Arsinoë, who had declared war against her, would have shown no mercy had she won the day; and with regard to Ptolemy XV, there is no proof that he was murdered, and if he was, the deed was done at Rome when Cleopatra was entirely under Cæsar's influence, and in his power. Her end, when rather than grace her conqueror's triumph she committed suicide, was that of a plucky woman (fig. 27, 13).

Cleopatra had one son by Julius Cæsar and three children by Antony. The son was murdered and two children are known to have married and to have had children.

SUMMARY OF PTOLEMAIC SECTION.

The Ptolemies born from consanguineous unions were neither better nor worse than the first four kings of the same family issued from non-consanguineous marriages, and had the same general characteristics. Their conduct of foreign affairs and of internal administration was in every way remarkable and energetic. They were not unpopular in their capital, and the Alexandrians rallied round their rulers when the Romans entered Egypt and resisted the foreigner.

Though much has been written about the awful sexual immorality of the Ptolemies, they must not be judged by comparison with the *morals* of this century, but an opinion must be based on the study of the literature and customs of the time. The chief characteristic of the Alexandrian literature is its eroticism, and the standard of morality was as low as it possibly could be. The spirit of disparagement which existed always led to a systematic slandering of the reigning king; and, later on, the Romans industriously blackened the character of their future opponents. Thus it is not unlikely that the Ptolemies were better than they have been painted. Their standard of morality was certainly not lower than that of their fellow townsmen.

The children from these incestuous marriages displayed no lack of mental energy. Both men and women were equally strong, capable, intelligent and wicked. Certain pathological characteristics, doubtless, ran through the family. Gout and obesity weighed heavily on the Ptolemies, but the tendency to obesity existed before consanguineous unions had taken place.

The male and female effigies on coins are those of very stout, well-

nourished persons. The theory that the offspring of incestuous marriages is shortlived receives no confirmation from the history of the Ptolemies

The length of life of the Ptolemaic kings was as follows:—

Ptolemy I, Soter	...	...	...	Died at 84 years old	
Ptolemy II, Philadelphus	...	...	...	" 62	"
Ptolemy III, Euergetes I	...	...	...	" 63	"
Ptolemy IV, Philopator	...	...	...	" 39	" (murdered ?)
Ptolemy V, Epiphanes	...	...	...	" 28	" (killed ?)
Ptolemy VI, Eupator	...	...	...	" —	" (?)
Ptolemy VII, Philometor	...	...	...	" 42	" (killed)
Ptolemy IX, Euergetes II	...	...	...	" 60	"
Ptolemy X, Soter II (Lathyros)	...	...	...	" 61	"
Ptolemy XI, Alexander I	...	...	...	" 62	"
Ptolemy XII, Alexander II	...	...	...	" 29	" (killed)
Ptolemy XIII, Auletes	...	...	...	" 59	"
Ptolemy XIV and Ptolemy XV	...	...	...	" —	" (both killed young)

Omitting those who died violent deaths, the average length of life of the Ptolemies was 64 years. Several women of the family reached an advanced age, amounting in three cases over 60 years. Owing to the lack of statistics in ancient Alexandria, it is impossible to compare the length of life of Ptolemaic kings with that of other Alexandrian families. But when we consider the nature of these lives, diversified by intrigues, murders, wars and debauchery, we may admit that the Ptolemies possessed remarkably strong constitutions.

Sterility was not a result of these consanguineous marriages. No case of idiocy, deaf-mutism, &c., in Ptolemaic families has been reported. With regard to the theory that hereditary pathological tendencies are "reinforced" by consanguineous marriages, cousins or near relatives who marry are not usually affected with nor predisposed to deaf-mutism, idiocy, epilepsy, nor to the other infirmities which are said to threaten the children of consanguineous parents. There can be no question of any reinforcement of a hereditary tendency which does not exist on either side. The history of the Ptolemies does not show that their predisposition to obesity or to gout was increased by their consanguineous marriages. Had the families of these monarchs suffered from some hereditary disease, the local satirists would have made capital of it, with due exaggeration, and the fact that they were silent is of the utmost importance.

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